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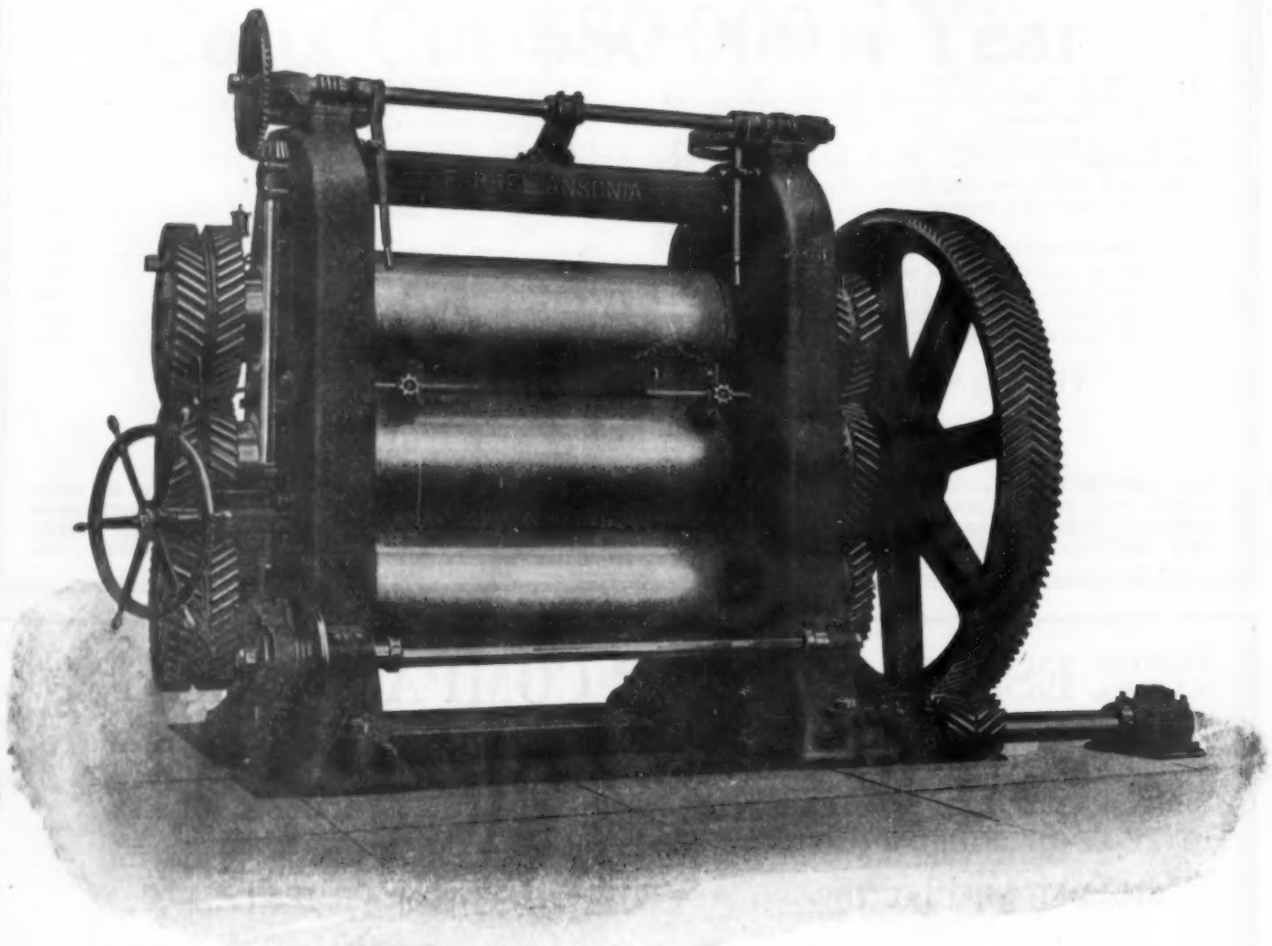

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THE RUBBER AGE AND TIRE NEWS

The Vulcanization of Rubber at Constant Temperature and by a Series of Increasing Temperatures[1]

By G. D. Kratz and Arthur H. Flower

It has long been known that when the vulcanization of rubber is effected by heating for a period of time at a definite and constant temperature, the rate of combination of the sulfur with the rubber decreases with the time. In this particular instance, however, as is recorded in the experimental part of this paper, we have endeavored to maintain a constant rate of combination of the sulfur and rubber by a variation in the temperature. Our efforts have been confined primarily to devising a method for calculating a series of temperatures by the use of which the rate of vulcanization might be accurately controlled. With this possible, we desired to make a comparison of the physical characteristics of a rubber mixture vulcanized to the same point by both methods.

Although it is not within the scope of this article to review in its entirety the literature upon the subject or to draw conclusions from the results previously obtained by others, certain of these should be briefly recalled.

The vulcanization of rubber at constant temperature was regarded by Webber[2] as consisting in a chemical reaction between the rubber and sulfur. Later, Skelton[3] also recorded results which tend to show that the combination of sulfur with rubber is strictly a chemical reaction, which is first preceded by the melting of sulfur and its solution in the rubber. Likewise he maintains that the rate of combination for unit time and constant temperature decreases with the decrease in the active mass of the sulfur present. Ostwald,[4] on the contrary, has regarded the vulcanization phenomenon as due to an absorption of the sulfur by the rubber, the rate of which, when expressed graphically, follows the typical absorption isotherm. Spence[5] and his co-workers, however, have demonstrated that Weber's vulcanization curves, on which Ostwald based his calculations, are subject to correction. They[6] have also shown almost conclusively that the vulcanization phenomenon is the resultant both of an adsorption and a chemical interaction of the sulfur with the rubber, so that the views of others are probably not entirely free from need of modification.

Furthermore, from the results obtained by Spence it is quite obvious that when vulcanization is effected at constant temperature, the major portion of the sulfur combines with the rubber during the early stages of the reaction. And it is equally apparent that a lowering of the initial temperature and subsequent increasing of it at regular intervals would tend to make the reaction proceed more uniformly.

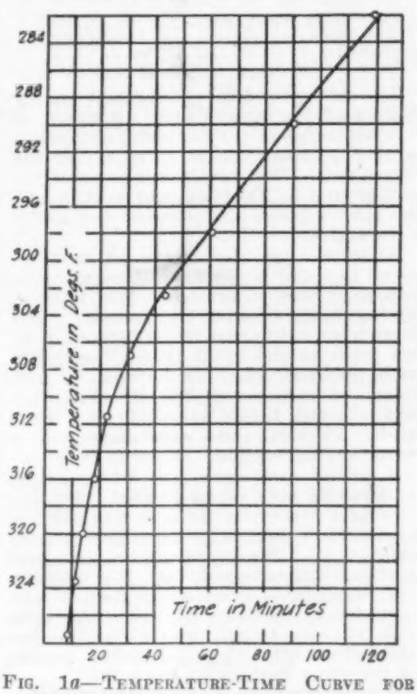


FIG. 1a—TEMPERATURE-TIME CURVE FOR VULCANIZATION TO TECHNICAL CURE

In fact, for many years it has been common technical practice to employ this method, popularly known as a "rising cure," but as King[7] has recently pointed out, the use of the "rising cure" has been based mainly upon the fact that it affords a means whereby the low heat conductivity of the rubber may be minimized rather than for the above reason, for it is well established that in the case of large bulky articles, unless the vulcanizing temperature is exceedingly low, or unless it is initially low and gradually increased as the reaction proceeds, the outside surface may be over-vulcanized before the heat has thoroughly penetrated to the interior of the mass.

With the former idea in mind it appeared to us that by employing slabs of a thickness such that they would not be subject to King's contention, a series of increasing temperatures could be previously calculated which would effect the combination of a unit amount of sulfur in unit time throughout the period of vulcanization. The vulcanization-time curve thus would appear as a straight line. A mixture vulcanized in this manner might have widely different physical properties from those of the same mixture vulcanized at a constant temperature.

One of us[8] has already shown that there is a distinct and readily measurable relationship between the time required for vulcanization and the temperature at which it is effected, although there is hardly sufficient evidence to warrant its expression as a law as previously formulated by Bourne.[9] Based on our previous observations we have been able to calculate with accuracy the relative rates of vulcanization for various temperatures and to apply these different temperatures so that the vulcanization-time curve did actually take the form of a straight line. The satisfactory results obtained were remarkable in that the degree of vulcanization was measured not by chemical but by physical means, which is shown later to be a dangerous procedure.[10]

In the application of the above, however, although the accuracy of our calculations and the control obtained over the rate of combination of the sulfur with the rubber exceeded our expectations, the differences noted in the physical characteristics of a mixture vulcanized by the two methods were not widely different until a sulfur coefficient of 3.9 was obtained. At this point, vulcanization at constant temperature resulted in a product which was noticeably inferior to the same mixture when vulcanized by a series of increasing temperatures.

This was not entirely unexpected, as, in the case of a mixture containing 5 per cent of sulfur, vulcanized to the point of

[1] Presented before the Rubber Section at the 56th Meeting of the American Chemical Society, Cleveland, September 10 to 13, 1918.
[2] "Chemistry of India Rubber," 1906 edition, pp. 85-88.
[3] *India Rubber J.*, 46 (1913), 723; *Rubber Ind.*, 1914.
[4] *Kolloid-Z.*, 6 (1910), 136.
[5] *Ibid.*, 11 (1912), 28; *Chem.-Ztg.*, 36 (1912); 1162; *Kolloid-Z.*, 11 (1912), 274.
[6] *Kolloid-Z.*, 8 (1911), 304; 11 (1912); 13 (1913), 265.
[7] *Met. and Chem. Eng.*, 18 (1918), 5.
[8] G. D. Kratz, *India Rubber Review*, 16 (1916), 225.
[9] *India Rubber J.*, 45 (1913), 120.
[10] This work is now being repeated, the rate of vulcanization being measured by both chemical and physical means.

"technical cure"[1] with a sulfur coefficient of 1.69, the vulcanization-time curve at constant temperature so closely approximated a straight line that, for all practical purposes, a unit amount of sulfur may be said to have combined in unit time by either method. In fact, the same statement may be made with reservation even up to a vulcanization coefficient of 2.9, although at this point both the tensile strength and elongation, particularly the latter, of the mixture vulcanized at constant temperature were found to be slightly inferior to those obtained when vulcanization was effected by a series of increasing temperatures.

Thus our results would tend to show that the values for the sulfur coefficient, as previously given by others, are in all cases high. Even the figures 2.8 to 3.0, recommended by Spence,[2] appear to be excessive, while the values established by Eaton and Day[3] are entirely out of question. Furthermore, it seems evident that, as has previously been stated by DeVries,[4] changes in the rubber-sulfur mixture which determine the physical properties of the mixture proceed independently of those which determine the vulcanization coefficient. Or in other words, the past history of the sample must be known if it is to be judged solely on the basis of its sulfur content. With such the case, certain qualifying statements should be made if it is to be assumed that a stoichiometric relationship exists between the rubber and sulfur at what is generally known as "optimum cure."

Likewise, it is obvious that whatever figure may be decided upon as the correct vulcanization coefficient for Hevea rubber, it is essential that, in order to obtain maximum physical results by vulcanization at constant temperature, restrictions be placed upon the minimum amount of sulfur and catalyst allowable in the original mixture. For best results at constant temperature there should be present in the mixture such quantities of both sulfur and catalyst that the active mass of the sulfur is not decreased to an extent that will slow up the rate of reaction before the desired sulfur content is attained. We have shown that if this is not taken into consideration the continued heating necessary to effect the combination of the latter fractions of the sulfur undoubtedly impairs the quality of the final product.

Summarizing briefly, under certain conditions we have found it possible to obtain a uniform rate of vulcanization for a rubber-sulfur mixture by employing a previously calculated series of increasing temperatures such that the vulcanization-time curve is reduced to a straight line.

By so doing we have shown that at comparatively high sulfur coefficients a better product is obtained by vulcanization with a series of increasing temperatures than with a constant temperature. We have also found the vulcanization coefficients previously recommended by others to be excessive, and that, unless the history of the vulcanization phenomenon is fully known, it is unsafe to judge samples solely on the basis of their sulfur content.

EXPERIMENTAL PART

In order that our calculations should be comparable with other work, our experiments were carried on with the same

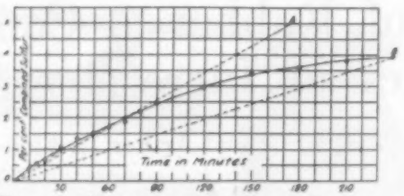


FIG. 1—VULCANIZATION-TIME CURVE AT CONSTANT TEMPERATURE

rubber mixture as previously employed[5] not, however, using the same lot of rubber. This mixture consisted of the following proportions by weight:

First latex plantation crêpe.....	100
Zinc oxide	100
Sulfur	5
Basic amine	0.33

The rubber used was of the best quality typical of its variety and, as before, it was subjected to the minimum amount of milling necessary to work in all of the ingredients. The basic amine (catalyst) was ground to 200 mesh and worked into the rubber before the pigment and sulfur were added.

After mixing, the compound was allowed to stand for 48 hrs. before any portion of it was vulcanized. This interval having been allowed for recovery, portions were vulcanized in a hydraulic platten press of the usual type. The molds used produced slabs or buttons ⅛ inch thick. A recovery period of seven days was allowed before physical tests were made. Physical tests were made with a Scott testing machine (vertical type).

A button mold was used where sulfur estimations only were desired. By employing a ten-cavity mold it was possible to obtain a sample for analysis at any point during the vulcanization. It was previously determined that the momentary releasing of pressure on the plattens, in order to partially withdraw the mold and remove a button, was without noticeable effect upon the final sulfur content of the other buttons in the mold.

All temperatures were maintained within 0.5° F. on either side of the figures given. In cases where a series of increasing temperatures was employed, each temperature change was made and established within one minute. This was accomplished by the use of a double system of steam regulators on the steam line to the press.

Throughout the following work, combined sulfur estimations were made by the method of Rosenstein-Davies,[6] each figure given being the average of at least two determinations checking within 0.1 per cent. In every instance the samples for analysis were previously subjected to 24 hrs. continuous extraction with acetone in a Soxhlet apparatus, dried in air, and then *in vacuo* at 100° C. to constant weight.

EXPERIMENT 1—Under this head, an investigation was made of the rate of vulcanization of the mixture at a constant temperature of 298° F. Our results, which confirm those previously obtained by others, are tabulated in Table 1 and are expressed graphically in Fig. 1. By this table and figure it is also shown that although 60 per cent of the sulfur present in the mixture combined with the rubber during the first two hours, less than 80 per cent had entered into combination at the end of 4 hours.

In addition to this, it is seen in Table 1 that the "technical cure" for this mixture is obtained in about 60 min. at 298° F. with a vulcanization coefficient of 1.69. Further, while the general shape of the curve in Fig. 1 was found to be convex to the *x*-axis, that portion up to and including this 60 min. point very closely approximates the straight line OA drawn through this point. Thus in the case of this particular mixture "technical vulcanization" is attained before the active mass of the sulfur present is decreased to an extent which would produce a marked decrease in the rate of vulcanization.

EXPERIMENT 2—It has been shown in Experiment 1 that at a coefficient of 1.69 our method was not applicable for the differentiation of the small variations in the quality of the mixture due to the method of vulcanization employed. For this reason it was decided to effect a comparison of the physical characteristics of the mixture when vulcanized to a coefficient of 3.9 at constant temperature and by a series of increasing temperatures.

TABLE I—VULCANIZATION AT A CONSTANT TEMPERATURE OF 298° F.

Time of Vulc'tion Min.	C'bined Sulfur Per cent	Tensile St'gth Lbs. per Sq.In.	Elongation Per cent	Perm'ent Set Per cent
10	0.404	....	...	....
15	0.578	....	...	....
20	0.663	....	...	....
25	0.840	....	...	....
30	1.080	1527	725	14.32
40	1.330	1533	710	14.06
50	1.490	1930	707	15.23
60	1.690	2277	697	15.62
70	1.875	2015	685	17.97
80	2.170	2102	690	20.30
90	2.485	2055	680	21.09
120	2.945	2156	678	24.22
150	3.410	2060	685	25.78
180	3.600	1725	677	23.44
210	3.780	1558	680	23.44
240	3.920	1435	652	18.75

The temperatures and times to be employed to effect vulcanization by the latter method may be readily obtained by applying the data given in Table I and Figs 1 and 1*a*. First, the number of different temperatures to be used should be previously decided upon. Second, the number of minutes required to effect a "technical cure" at each of these temperatures may be obtained from Fig. 1*a*. Then, treating each temperature in the series individually, let

t = time in minutes required to effect a "technical cure" at that temperature. (Fig. 1*a*.)

t' = time in minutes required to effect a "technical cure" at 298° F. (Table I.)

c = time in minutes required to attain the desired vulcanization coefficient at 298° F. (Table I.)

n = number of temperatures in the series.

Then, $\frac{t \times \frac{c}{t'}}{n} = T$, where T equals the number of minutes required for vulcanization at a given temperature when employed in the previously established series.

[1] The term "technical cure" is used to indicate that degree of vulcanization at which are found coincident maximum tensile strength and maximum elongation. This is not necessarily dependent upon the vulcanization coefficient, although a certain relationship does appear to exist between them. "Technical cure" is thus used in contradistinction to "optimum cure," as it has been our experience that what is generally known as "optimum cure" is, in most instances, for practical purposes an overcure and that the previously established values for the correct vulcanization coefficient are for the most part high. Certainly it should not be in excess of 2.8 per cent for Hevea rubber. In connection with other work we have also determined the vulcanization coefficient of certain rubbers other than Hevea. These results show that although the coefficients for these rubbers are not necessarily constants, as suggested by Spence and Eaton, they should not be in excess of the following figures: Plantation Hevea, 2.8; Fine Hard Para, 3.2; Red Kassai, 3.4; and Ceara (Manihot), 4.4. Samples of these rubbers with higher coefficients were found to age quickly with rapid deterioration.

[2] *India Rubber J.*, 52 (1916), 861.

[3] *J. Soc. Chem. Ind.*, 36 (1917), 1116.

[4] *India Rubber J.*, 53 (1917), 101.

[5] Kratz, *India Rubber Review*, 16 (1916), 225.

[6] *Chemist Analyst*, 15 (1915), 4.

It is quite obvious that, if temperatures are chosen at random from the figure, the sum of the times for the complete series of temperatures may not be the same as the time required to effect the desired degress of vulcanization at a constant temperature of 298° F. On the other hand, it is easily possible to make a selection such that the total time of vulcanization is the same by either method. In order that our results might be strictly comparable, we chose the following series of four temperatures, the sum of the times of which was exactly equal to 240 min., the time required to obtain a coefficient of 3.9 at 298° F.

285.5° F.....	107 min.
298.0° F.....	60 min.
302.5° F.....	43 min.
307.0° F.....	30 min.
Total.....	240 min.

Employing the foregoing series of temperatures and times, the mixture was vulcanized in a button mold for a total time of 240 min., samples being removed for combined sulfur estimation at hourly intervals and at each change in the vulcanizing temperature. These results are shown in the first four columns of Table II and expressed graphically by the solid line in Fig. 2. It is readily observed that the results obtained coincide almost exactly with the hypothetical straight vulcanization-time curve represented by the dotted line OB in Figs. 1 and 2.

Separate slab cures were then made for physical tests, at the temperatures and times required to produce vulcanization coefficients of 1.56, 2.96, and 3.86. The results of these tests are shown in the last three columns of Table II.

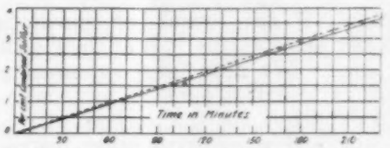


Fig. 2—Vulcanization-Time Curve for Increasing Temperatures

Fig. 2—Vulcanization-Time Curve for Increasing Temperatures

To facilitate comparison, the results of these physical tests, together with those obtained at the same sulfur coefficient when vulcanization was effected at a constant temperature of 298° F., have been grouped together in Table III. From this table it is seen that there is very little difference in the tensile strength of the mixture at coefficients of 1.69 or 2.94 when vulcanized by either method. But in both instances a series of increasing temperatures appears to produce a product of superior elongation. When the coefficient is increased to 3.9, however, it is seen that the product obtained by employing a series of increasing temperatures is markedly superior to that obtained at constant temperature, both as to tensile strength and percentage of elongation.

Table II—Vulcanization by a Series of Increasing Temperatures

Total time of V'canization Min.	Time at Different Temps. Min.	Temperature Deg. F.	Combined Sulfur Per cent	Tensile Strenght Lbs. per Sq. In.	Elongation Per cent	Permanent Set Per cent
60	60	285.5	0.937	....	....	....
107	107	285.5	1.567	2168	715	17.97
...	107	285.5	....	....	...	....
120	...	....	1.879	....	...	....
...	13	298.0	....	....	...	....
...	107	285.5	....	....	...	....
167	...	....	2.702	....	...	....
...	60	298.0	....	....	...	....
...	107	285.5	....	....	...	....
180	60	298.0	2.963	2234	714	25.52
...	13	302.5	....	....	...	....
...	107	285.5	....	....	...	....
210	60	298.0	3.252	....	...	....
...	43	302.5	....	....	...	....
...	107	285.5	....	....	...	....
240	60	298.0	3.862	1944	705	25.00
...	43	302.5	....	....	...	....
...	30	307.0	....	....	...	....

Table III

Combined Sulfur Constant Temp.	Combined Sulfur Increasing Temp.	Tensile Strength Lbs. per Sq. In. Constant Temp.	Tensile Strength Lbs. per Sq. In. Increasing Temp.	Elongation Per Cent Constant Temp.	Elongation Per Cent Increasing Temp.
1.690	1.567	2277	2168	697	715
2.945	2.963	2156	2234	678	714
3.920	3.860	1435	1944	652	705

It is recognized that the results which have been recorded herein are not subject to indiscriminate or general application. This work has been confined to the investigation of one rubber-sulfur mixture only, and our calculations have been based on the correct or "technical cure" of the mixture as being obtained after vulcanization for 60 min. at 298° F. However, as the comparisons made are relative, and as the principle involved will apply to other mixtures and other vulcanization coefficients, we are warranted in drawing the following conclusions:

1—That it is possible to calculate and apply a series of increasing temperatures such that the vulcanization-time curve for any rubber-sulfur mixture may be made a straight line, the slope of which is dependent on the temperatures employed and the amount of catalyst present.

2—That in vulcanization at a constant temperature, in order to procure maximum physical properties, sulfur must be present in the mixture in such an amount that its active mass is not decreased to an extent which will appreciably slow up the rate of reaction before the desired vulcanization coefficient is attained.

3—That for rubber-sulfur mixtures containing 5 per cent or less of total sulfur, the physical properties of the mixture, when vulcanized by a series of increasing temperatures, are superior to those obtained by vulcanization at constant temperature this is particularly true at vulcanization coefficients of 2.8 or above.

4—That the vulcanization coefficient for Hevea rubber is probably between 1.7 and 2.8.

5—That it is dangerous to evaluate samples of vulcanized rubber solely on the basis of their vulcanization coefficients.

Rubber Age Information Exchange

Number of Tires Per Carload

Inquiry No. 93—Please let us know approximately how many tires of various sizes make up a carload.

Answer—It takes about 1,500 automobile casings of various sizes to fill a medium-sized box car.

Embossing Presses

Inquiry No. 94—We are in the market for a machine for making the small embossed metal checks that are used in marking serial numbers and the like on tire casings and other moulded rubber goods. Please put us in touch with a good maker of these machines.

Answer—You can get the machine you want from Roovers Bros., 100 Schermerhorn St., Brooklyn, N. Y. Many manufacturers buy these "serial numbers" from Mayer & Co., Indianapolis, Ind.

Use of Clay in Rubber Goods

Inquiry No. 95—Please tell us if clay is used to any extent by rubber manufacturers. How fine must it be ground?

Answer: Clay, so called, is not, as far as we know, used in rubber compounding, though we understand experiments have been made with a view to using it for this purpose. To be fit for mixing with rubber it would have to be ground so that it could be bolted through 300 mesh sieves.

Tire Repairing

Inquiry No. 96.—I am a tire man here in New York and wish to take a practical course in tire repairing without having to leave the city. Can you tell me where I can follow such a course?

Answer: Anderson's Steam Vulcanizer Company, 225 West 52nd Street, New York City, make a specialty of training tire repairmen.

Laboratory Mills and Calenders

Inquiry No. 97.—We are in the market for an experimental mill and calender equipment for laboratory work and should appreciate you advising us if you know of any second-hand equipment of this kind that is offered for sale. Also who makes new equipment of this type.

Answer: We know of no second-hand laboratory mills or calenders for sale at this time However, the following concerns build this kind of equipment: Adamson Machine Company, Akron, Ohio; Birmingham Iron Foundry, Derby, Conn.; Farrell Foundry & Machine Company, Ansonia, Conn.; Textile-Finishing Machinery, 83 Exchange Place, Providence, R. I.; Turner, Vaughn & Taylor, Cuyahoga Falls, Ohio.

Reclaiming Tire Fabrics

Inquiry No. 98.—I have a large tire repair business and would like to know a method for reclaiming tire fabrics by removing all the old rubber without damaging the fabric. My idea is to re-coat the fabric and use it in repairing tire casings.

Answer: The C. D. Hibbs Rubber Company, Fort Worth, Tex., has a process for doing what you wish to accomplish.

Ford Not Tire Manufacturer

Inquiry No. 99—There is a rumor abroad again to the effect that the Ford Motor Company, Detroit, Mich., has become a tire manufacturer. Is this true?

Answer: The Ford Motor Company is making a few tires, but merely in an experimental way, and cannot at this time be considered as a tire manufacturer. What the future may develop we cannot say.

Essentials of Foreign Trade*

By Wm. E. Aughinbaugh, M.D., LL.D.

Professor of Foreign Commerce, New York University

If we are going to retain foreign markets we want and we need the good will of all the people of all the world. A foreign-American press agency calculated to supply correct cable news, gratuitously if need be, regarding our country, its happenings, giving information of the doings of those within our borders would do much to hasten the bringing about of a better understanding and in the development of a more friendly feeling between us and the rest of the world and especially of Latin-America—our special field of opportunity.

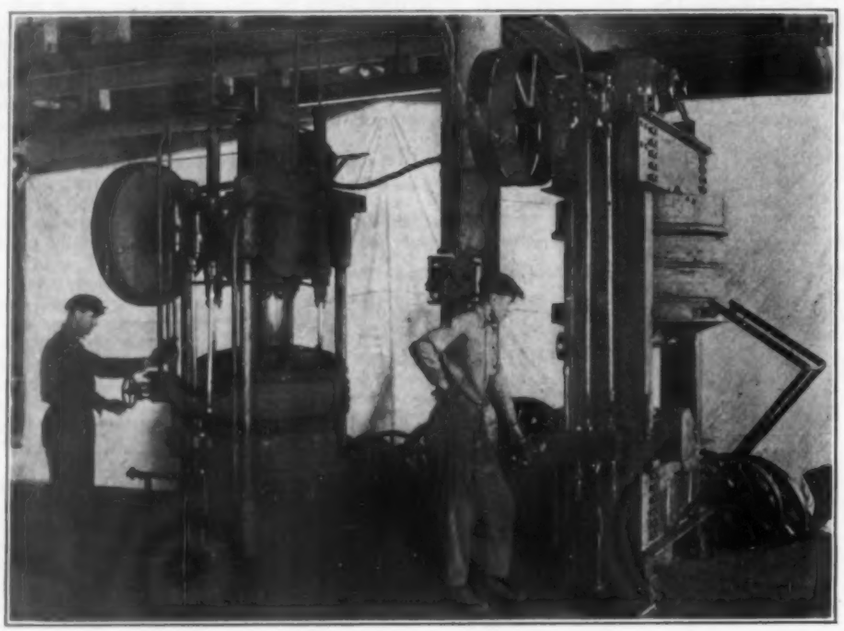
Our tariff needs adjustment so that it may be made flexible or elastic and so adapted as to enable us to favor those lands which extend trade courtesies to us. This is common in European countries.

To accomplish this a board of thoroughly versed men should be organized and their suggestions absolutely adopted. And let me emphatically suggest that it should not be composed of derelict castoff politicians but be formed of the best and brainiest men of the land, with a decided preference for those who have had practical experience. Such men exist in the United States and would be willing to serve.

While our consular service is vastly improved over what it formerly was, still there exists ample room for changes for the better. In order to attract and retain qualified men the salaries should be made commensurate with the work to be rendered. A pension system should be created. Each consulate should be given a certain amount annually for the purpose of entertainment especially on our national feast days as well as on the feast days of the nation to which the consul is assigned.

The European nations provide such funds. If our consuls or ministers do any entertaining it is at their own expense. We need laws empowering consuls to act as bankers for American exporters for the purpose of collecting and negotiating other instruments where banking facilities do not exist. They should be given authority to act as consignees for American shipments where advisable.

It is an absolute fact that we have not a single trade treaty which should not be redrawn. Most of them are obsolete, and were made when we were an agricultural nation pure and simple. Today we are more largely interested in manufacturing. We are in a position to obtain better trade treaties at present than ever before in our history.



Pressing American Solid Tires onto Motor Truck Wheels

For example, we are the largest purchasers in normal times of the things France produces, yet we have the same meager trade treaty with her that she accords barbarian nations such as Liberia, Abyssinia and the Congo. If we asked for better treaty terms from the nations of the world they would be gladly granted, yet our legislators have a deaf ear to all entreaties of this nation made by trade organizations.

There is an entire lack of cooperation and coordination between the various branches of our Government interested in foreign trade and our 2,000 odd business associations and organizations. Until complete harmony exists nothing definite can be accomplished. For example the War Trade Board allows parcel post packages to be shipped without a license yet within the past month I have had the postal authorities refuse to accept for mailing three empty four-ounce bottles intended for Brazil unless a war trade license was granted.

They took four weeks to reach this decision. Then the War Trade Board considered the problem for five weeks and returned it to the postal authorities. In the meantime the Brazilian merchant cabled canceling an order that aggregated in a year $30,000, saying that he had made arrangements to get his goods from France. The manufacturing jewelers of Providence called on the Secretary of Commerce and asked the department to advise them what cheap line of goods they might make during the war of metal that would not embarrass the Government in its military plans, yet keep their factories busy and secure foreign trade.

After a week's session the Government advised them what to do. Goods were manufactured after the plans suggested by the Department of Commerce and large orders obtained from overseas markets. The War Trade Board promptly refused to sanction the shipping of one order, and there is no redress for the exploited manufacturers. It almost seems that those in power deem it their duty to annoy and harass the manufacturer and exporter. Unless the authorities work with the producer and aid him in entering foreign fields we can hope for nothing abroad.

Every European nation is today making plans for securing trade after the war and is building up its export trade. The governments stand behind

* Continued from the January 10, 1919, issue of The Rubber Age and Tire News.

the individual as they should but the American manufacturer is ignored by the state. There is such a thing as patriotism in selling goods. Unless Americans are given the management of American branch houses in overseas markets and the former European managers deposed we can never hope to have the complete harmony so necessary between the home office and the foreign branches.

Some American houses having German and British managers abroad are now awakened to the results of this short-sighted policy. We should adopt and live up to this slogan: "American managers and American salesmen for American business all over the world." We have the material in this country in profusion. The fault is entirely with the employer who will not pay the high salaries that Americans demand.

Our universities are turning out men qualified for foreign positions but employers are not alive to the vital features of securing them. I know of one American firm operating on the west coast of Latin-America. In their Chilean house the last time I was there they had six Americans employed among a force of nearly 2,000, the rest being of all nationalities.

Naturally when a man went to sell goods to a Chilano he made an effort to sell German goods if he was a German and British made goods if he was a Britisher, and this concern carried all kinds of foreign competing lines along with American brands. As a consequence instead of selling several hundred American automatic pianos yearly it sold in 1913 just six, as against 203 foreign makes, German predominating. Needless to say the salesman was a German.

One of my class at the New York University who had taken the foreign trade course and spoke Spanish and French as well as English, for we require that our foreign trade students know at least Spanish, was offered last week a position with this house at the munificent sum of $8 a week.

Within the past four years, due to the European war, many new export houses have sprung up throughout the United States. With ample high-grade and experienced Americans available for the proper management of these concerns we find a large banking house putting its export department in charge of a man who four years ago was a patent attorney in the Middle West; another whose prosperity has been heralded to all parts of the world entrusts its management to a man who was formerly an undertaker; a third to a minister; a fourth to an ex-naval officer; a fifth to a marble and granite salesman. With empty shelves everywhere in all the shops of the world it does not require salesman ship to dispose of goods. Orders have come in without effort and many of these concerns have made money, while others have suffered gigantic losses which they were able to stand due to the profits made in other lines.

With the advent of peace most of these houses will fail, for their managers are simply square pegs in round holes and cannot steer their business craft through the intricate channels of foreign trade, for they do not possess the necessary practical experience which the European traders operating in this territory already have.

Capital is shy. Unless investments are absolutely guaranteed investors are wary. One of the chief reasons, if indeed not the chief reason, for the scarcity of American money in foreign ventures is the indefinite and indifferent attitude of our State Department in failing to properly protect its citizens abroad or in seeking redress for injuries done individuals or business houses operating in other lands.

The blase manner with which this Government has viewed the attacks on Americans, their murder, the destruction of their property, and the complete annihilation of their business, as for example in Mexico, during the past few years, has done more to frighten American investors and capitalists of all classes from entering these fields than one hundred years of peaceful international intimacy could possibly have developed.

This is an old story the world over as far as the American citizen is concerned. We have been exploited in foreign lands both by the individual as well as by the state and in most instances our petitions for redress are neglected or else entirely ignored by our Government. If one could get access to the secret records of our State Department for the past thirty years I am sure that he would be forced to hang his head in shame for our lack of national pride.

A startling example of the inefficiency of our State Department in protecting our interests is that it allows citizens of foreign countries, notably in the Argentine, Chile and Cuba, to register American trade-marks and actually prevent the legitimate owners from shipping their goods into the said nations unless they buy back their own property from the scoundrels who have appropriated it.

When our Government announces to the world a definite, concise policy for the protection of its citizens engaged in legitimate enterprises in foreign lands and carries out this plan with dignity and promptness, or if obliged to by force should the necessity arise, then may we expect the respect of all the peoples and the governments of the world, and not until then may we look for our investors and business men to court trade in the verdant fields of opportunity which lie beyond our boundaries.

It is a notable fact that every neutral and allied country has been dispatching trade commissions to other lands with a view to holding their newly acquired business and laying plans for the future. The United States has not done so. It is absolutely imperative that such a step should be taken immediately. We cannot afford to delay longer. These bodies should be composed of qualified business men and have complete power to alter or make trade treaties and if necessary to loan money when such transactions could be satisfactorily done. Nothing could be more conducive to our future national prosperity and to the establishment of a better business relationship and it should be the duty of such organizations as yours to undertake a movement along this line and to get other similar trade bodies to bring the subject emphatically and persistently to the attention of the Government.

Book Review

RUBBER PRODUCING COMPANIES. 1918 EDITION. Published by the Financial Times Limited. 72 Coleman Street, London, E. C., England.

The 1918 edition of the *rubber producing companies* is now ready, the latest reports and crop figures of nearly 600 plantation rubber companies are brought up to date, and a mass of most useful information to all investors in plantation rubber shares is to be found in the book. Amongst the principal features may be mentioned—net profits, dividends, outputs, average prices realized and costs for several years past, excess profits, duties, total area of estates, also planted acreage, showing years of planting, estimates for current year, etc., etc.

It is no exaggeration to say that this official work is absolutely essential to all investors, or would-be investors, in the rubber planting industry.

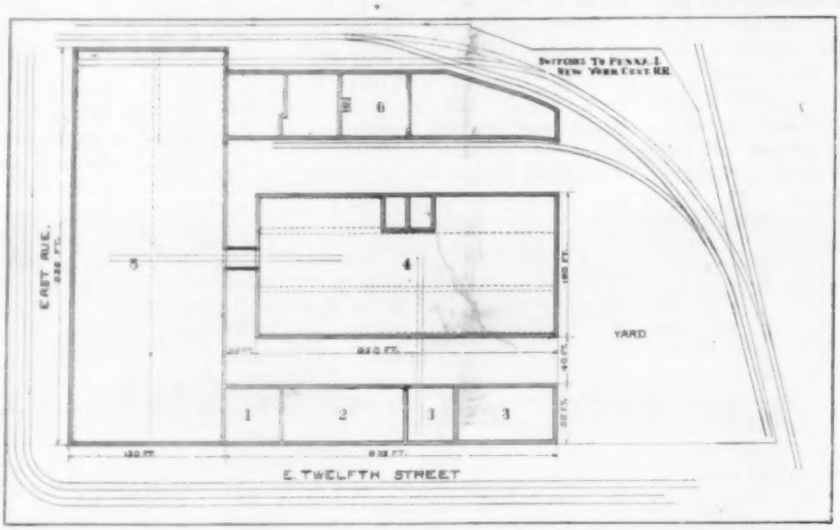
HENDRICKS' COMMERCIAL REGISTER OF THE UNITED STATES FOR BUYERS AND SELLERS. Two thousand three hundred and eighty-four 7¾ x 9¾ pages. Twenty-seventh annual edition, 1918-1919. Published by the S. E. Hendricks Company, Inc., 2 West 13th Street, New York City.

The new edition of this valuable reference book for buyers or sellers has been thoroughly revised and been brought up to date. For those not familiar with this book, reference is made to a complete alphabetical list of trade names of over 200 pages of two columns each. This list is printed on pink paper to easily identify it.

A Modern Plant for Building Rubber Machinery

Of more than passing interest to rubber manufacturers is the new plant of the Allen Machine Company, Erie, Pa., which is probably the largest and most modern of its kind in the West.

The Allen Machine Company, well known to rubber manufacturers the world over for its tubing machines, strainers and skiving machines, recently acquired the plant of the Nagle Corliss Engine Works, located at the corner of East 12th Street and East Avenue, Erie, Pa., transformed and reequipped it and now have it in full operation under the supervision of Edward Allen, founder and president of the company, who has been actively connected with the rubber industry for more than twenty years.



An idea of the size and efficiency of the new plant can be gained from a study of the accompanying plan, which shows its layout. The offices and engineering department are located in building No. 1, the pattern and pattern storage departments occupy buildings Nos. 2 and 3, respectively, the latter being equipped with a three-ton electrically driven elevator, specially designed for carrying heavy patterns.

An industrial railway runs through the pattern storage into the center of the foundry building, No. 4, which has three bays, each 200 feet long. The main bay has a span of 49 feet and is served by two electric cranes, of 10 and 30 tons capacity, respectively. The side bays of the foundry building, which are used for the lighter castings, have spans of thirty and a half and forty and a half feet, respectively, and are served by two six-ton and one four-ton crane.

The foundry has two cupolas with a capacity of 100 tons per day, and can handle individual castings up to 35 tons in weight. A roll pit is under construction for the casting of rolls.

A railway switch makes it possible to bring foundry supplies directly to the rear of the cupolas, while an industrial railway runs through the center of the main bay into the machine shop.

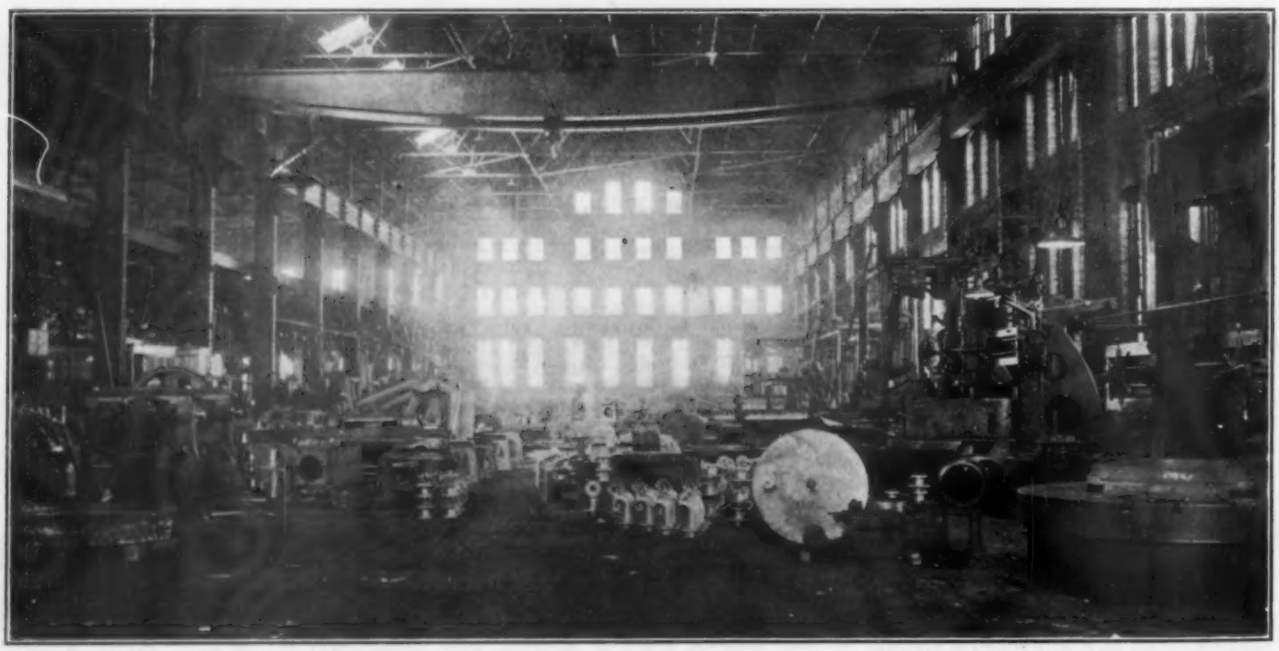
Building No. 5 houses the machine shop with its machine tools, a stock and a tool room, as well as an erecting floor and a shipping department. This building has three bays 332 feet long. The side bay, next to the foundry has a sixty-foot span and is served by two ten-ton electric cranes. One end is arranged for a gallery sixty feet in width by 250 in length, for the lighter machine tools and for the erecting of small machines.

The main bay of the machine shop building has a span of 69 feet, and is equipped with ten and twenty-five-ton electric cranes.

In this bay are located the heavy machine tools, including horizontal boring mills, open-side planers, heavy duty lathes, vertical boring mills, with a capacity up to sixteen feet in diameter, and the roll finishing equipment.

The latter equipment is essential to the proper manufacture of mills and calender rolls, due to the accuracy of finish required on roll faces and journals. This is said to be the only complete equipment in the Middle West for properly handling this important phase of the building of rubber machinery. It includes a roll corrugating planer, a lathe for boring calender rolls, a roll turning and necking lathe, and a roll grinder. The latter is motor driven with individual motor drives for the grinding wheels with crowning and neck grinding attachments.

The shipping department is located at the extreme end of the building and next to the erecting floor. The facilities of this department include a loading platform and a railroad switch. The cranes in both bays cover this switch so that an assembled machine may be lifted from any part of the machine shop and set on



View of Main Bay of Machine Shop at the Plant of the Allen Machine Company

the railway freight cars without transfer.

In building No. 6 are located a modernly equipped blacksmith shop and the power house.

Allen Products

The products of the Allen Machine Company are too well-known to need introduction. They include all kinds of rubber machinery except molds and cores.

One of the machines of the Allen line, which deserves special mention is the Allen tubing machine, which is built in sizes up to and including 12 inches.

When Uncle Sam was urgently demanding truck tires, Allen 10-inch tubing machines turned out 136,000 pounds each daily. A test taken on one of these machines showed that rubber was fed into it at a temperature of 80° cent, and after being worked through a steam cylinder forty-eight inches long showed an increase of only 5°. This efficiency is due to a properly designed cylinder and worm, and an improved water cooling design. Patented double heads for straining; insulation, etc., are furnished with Allen tubing machines.

Crackers, washers, refiners, mills up to 22 and 20 x 60 inches and calenders up to 24 x 66 inches of Allen manufacture are in operation in this country and in Canada. Mills up to 22 and 26 x 84 inches and calenders up to 32 x 92 inches are now in the process of manufacture. Bearings in Allen mills and calenders are of a design said to absolutely guarantee cool and properly lubricated journals.

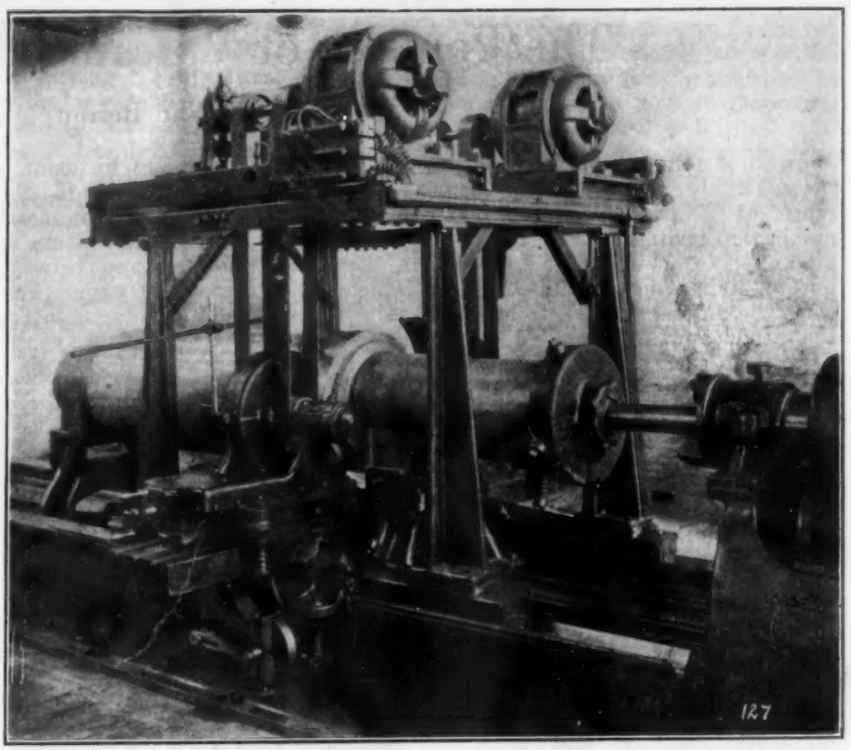
A few other types of machines manufactured are vulcanizer presses, accumulators, hydraulic presses of all sizes, and for all classes of work, belt presses, spreaders, fabric dryers, etc. Also a complete line of equipment for the manufacture and finishing of inner tubes, including the Allen Patented skiving machine and the Allen valve nut tightener. Over four hundred of these efficient machines are in operation in inner tube factories all over the world.

An Eastern office is maintained by the Allen Machine Company, in the Widener Building, Philadelphia, Pa., and the Middle West is cared for by a newly installed Akron office located in the Ohio Building, the latter in charge of W. H. Stillwell.

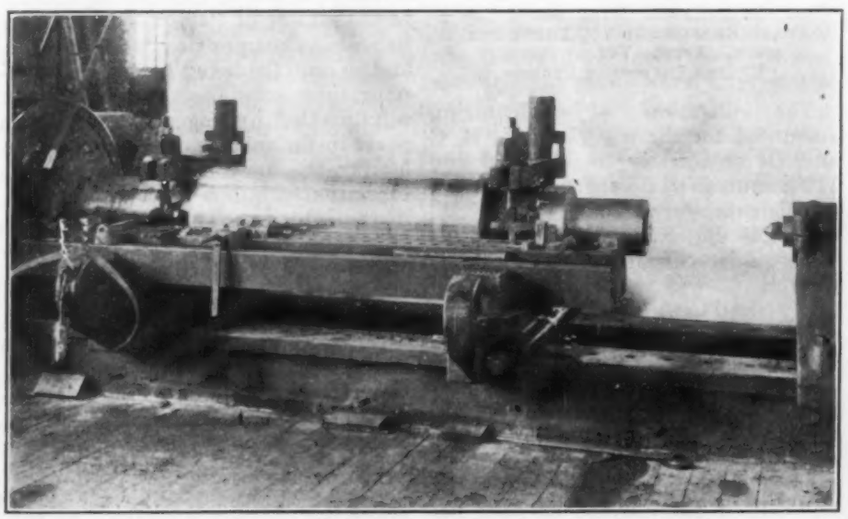
The Allen Machine Company has set aside a part of its plant for welfare work and the employes' association are installing a modernly equipped gymnasium. The formal opening of the new Allen plant was held Monday night, March 3rd, when over two hundred and fifty employes and company officials participated in a dance.

The officers of the company are: Edward E. Allen, president; J. A. Himrod, vice-president; A. G. Scheidenhelm, secretary, and P. A. Himrod, treasurer.

The Allen Machine Company holds a cordial invitation to all rubber men who may care to visit its plant and familiarize themselves with the products of this most modern of machine shops and the methods used in their manufacture.



ROLL GRINDING MACHINE AT WORK



ROLL-TURNING LATHE IN OPERATION

United & Globe Rubber Company

The Secretary of State of New Jersey has received and filed a certificate changing the name of the United & Globe Rubber Manufacturing Company, Trenton, N. J., to United & Globe Rubber Company. The certificate shows that the company has 2,457 shares of stock issued and outstanding.

Goodrich Retires Stock

Stockholders of The B. F. Goodrich Company, Akron, Ohio, in annual meeting on Wednesday, March 12, voted to retire and cancel 9,000 shares of preferred stock, leaving a total of $24,000,000 worth of this stock still outstanding.

H. E. Raymond, at his own request, was relieved of the work of executive in the Domestic Sales Department and will give his entire attention to the Foreign Department.

B. G. Work was re-elected president; H. E. Raymond, vice-president; C. B. Raymond, W. A. Means, W. C. Geer, A. B. Jones, H. K. Raymond and W. O. Rutherford, second vice-presidents; F. C. VanCleef, secretary; L. D. Brown, treasurer; H. Hough, comptroller; J. C. Lawrence, assistant treasurer, and H. C. Miller, manager of sales.

The stockholders re-elected all old directors for three years: L. D. Brown, W. C. Geer, C. C. Goodrich, F. H. Mason, W. A. Means and A. H. Noah.

Henderson Opens Far East Offices

F. R. Henderson & Company, the well known crude rubber merchants of New York City, and Akron, Ohio, have opened offices in Singapore, Straits Settlements.

Francis R. Henderson, head of the firm, spent several months in the Far East last year and acquired the International Trading Company, Limited, which has become Henderson Brothers, Limited, Singapore. During his stay in the East, Mr. Henderson also organized the firm of Henderson & Kenlemans, Limited, Batavia, Java, the active partner and manager of which is G. J. Kenlemans.

New Rubber Reclaimer

The Central Rubber Company, Defiance, Ohio, has entered the rubber reclaiming business.

The Porosity of Vulcanized Rubber*

By Dr. G. Van Iterson

In what follows, porosity of vulcanized rubber stands for the occurrence of a smaller or a greater number of cavities which have to be attributed to an unknown cause and not to air having remained behind when the different layers, from which the product was "moulded" were pressed on each other. Hereby it is necessary to make a distinction between surface porosity and interior porosity. Both these forms are met with in soft rubber articles as well as in vulcanite.

The expression porosity is also used in literature to denote the capacity of rubber to let gases diffuse, but it appears more suitable to accept for this the term permeability.

The phenomenon meant here, happens also to come under the French expression caoutchouc souffle, but this comprises likewise rubber inflated by air insufficiently pressed out. The interior porosity is called in French piqure.

Hancock[1] has already communicated that some rubbers yield a porous product on being cured, and rubber manufacturers are only too well acquainted with this phenomenon. That there is no clear conception as to its causes will be elucidated by a number of citations from recent literature. Before this, however, it is necessary to describe a simple experiment demonstrating both forms of porosity.

It is of general knowledge that rubber objects, when cured in direct steam and no precaution taken to prevent condensation of water vapor on their surface, become porous at the surface.

It is, however, by no means generally known, that with every rubber and with every mixture an interiorly porous product can be obtained. This succeeds in each case by under-vulcanizing rubber in direct steam and then by blowing the steam quickly off.

In Fig. 1 four test sheets obtained by vulcanizing a mixture of 92 1/2 parts good Hevea plantation crêpe and 7 1/2 parts sulphur have been illustrated. Taking them from the top they will be denoted by A, B, C and D. The curing took place with direct steam at 50 lb., while the autoclave was first preheated and the pressure brought to full pressure in about 4 minutes after introducing the moulds. The latter were flat metal plates, kept by small metal blocks at a distance of 5 mm. and between which the mix was kept under pressure by screwing the nuts on to the bolts. The mixture could consequently freely expand laterally.

Fig. 1

Test Sheet from Mixtures of 92½ Parts Rubber and 7½ Parts Sulphur, After Vulcanization During Different Periods

The duration of vulcanizing amounted for the test sheets A, B, C and D respectively to 5, 15, 60 and 120 minutes, while the vulcanization co-efficients were found to be 0.34, 0.74, 1.43 and 5.18. Hence A and B were under-vulcanized, A more so than B, C, was weakly, but already fairly well vulcanized, whereas D must be called over-vulcanized (Vide, Chapter 62, Part VI).

It may now be observed in Fig. 1 that A is interiorly strongly porous, B somewhat less so, while C does not show any trace of porosity. The spotted shading of C is caused by crystallized sulphur. This does not occur with D, which is perfectly homogeneous.

It should be added that the test sheets illustrated in Fig. 1 have been cut out of the larger sheets, which had been cured. Consequently, the surface porosity cannot be observed. The latter was, however, even present along the rim of D.

Considerably easier than demonstrating the porosity in soft goods, which was exclusively the question in 2, is to show the phenomenon with vulcanite. There also, "surface porosity" will occur when condensation of steam is not prevented by wrapping up the articles in tinfoil, immersing in tallow, or by the use of moulds.

"Interior porosity" can hereby only be prevented by heating the objects very slowly when the autoclave is closed and blowing off the steam very slowly after vulcanization. These precautions have to be followed with the more care, the slower the mixture vulcanizes, and according to the object being thicker. It cannot be called long at all when the pressure runs up within 1 1/2 hours to the desired one, and that the same rate is used to lower it again to 0. Should this be neglected then the result is that a vulcanite comes out of the autoclave which is inflated by bubbles.

One of the few explanations about porosity met with in literature is the one translated below, by Hubener[1], which, however, only relates to vulcanite.

"Dental rubber becoming porous during vulcanizing can be caused in different ways. If porosity shows itself on the surface then it is traceable to the presence of foreign ingredients in the plaster of Paris mould, such as impression composition, wax, vaseline, and so on. On being heated with sulphur these substances develop highly sulphuretted hydrogen, which causes pores in the surface of the rubber. In by far the most cases, however, the formation of bubbles is to be met with in the interior. They are the result of a falsely conducted vulcanization, of too rapid or too strong heating.

"What happens here is to be explained as follows: The reaction between sulphur and caoutchouc has to take place through addition of both materials. As, moreover, heat is generated, the caoutchouc, when the heat is suddenly applied is brought to a temperature far beyond that of the surrounding water, up to a point where the addition is replaced by substitution under the separation of sulphuretted hydrogen. This explanation covers practically all other points which occur when sheets become porous. If the reaction is being carefully initiated, then the heat of reaction which is generated has time to

* Communications of the Netherlands Government Institute for Advising the Rubber Trade and Industry, Part VII.

[1] Personal Narrative of the Origin and Process of the Caoutchouc Manufacture in England, 1857, 252.

[1] "Kautschuk and Zabntechinik," Kunststoffe 4 (1914), 9.

equalize itself against the surface. If, on the other hand, heating is applied too suddenly, the entire heat of reaction is liberated all at once, and caused the dangerous superheating. The surrounding hot water ought, therefore, to act as a cooler on the heat of reaction. It must be obvious that the cooling must take place more easily in thin sheets than in thick ones. Caoutchouc is known to be an extremely bad conductor of heat. Consequently the heat exchange takes place much more slowly with thick masses, and, therefore, it is easy to overstep the limit in the interior at which limit sulphuretted hydrogen makes its appearance. Hence it is necessary with thicker plates to increase the heat gradually, and for them a smaller amount of heat is on the whole necessary."

It may at once be observed that the above explanation of Hubener does not apply to the porosity of under-vulcanized objects, for these would have come, when "Normally" vulcanized, out of the autoclave free from bubbles, without a long time of pre-heating being necessary. Moreover, that explanation is of very doubtful value for vulcanite. For it is duly stated that the evolution of heat during the vulcanization process is trifling—it is even denied by some—and the evolving of such a rise in temperature that the formation of sulphuretted hydrogen would be its result, is very improbable. It is certainly a fact, that of preparing vulcanite, sulphuretted hydrogen is formed, but not in great quantity.

Against this we put the translation of an explanation of P. Pelier[2], this time for soft rubber objects:

"The bubbles (soufftures) are generally due to a residue of moisture of solvents (benzine, carbon bisuiphide, etc.) having been used for the rubber, and which volatilize in the interior of the mass during the curing process, forming cavities.

"The action of sulphur or of the impurities which it contains, on oxidized rubber, can produce sulphurous acid which forms bubbles. In the same way, mixtures containing carbonates (of lime or magnesia) may, through the adding of reaction compounds, evolve some acid which again will cause porosity.

"In order to diminish the pores in the vulcanized articles, it is recommended to add 0.5 to 1 per hundred quick lime intended to absorb the moisture in the urvver when it is being plasticized. Badly conducted curing can bring about the following accidents in the manufacture:

"Interior porosity (le Piquage), which consists of numerous small gas bubbles in the body of the cured mass on leaving the autoclave. The more bulky the rubber is, the more pronounced is the defect. Attributed to incomplete drying or to rubber which has been frozen, it must also be brought home to an excess of mechanical treatment of the mixers, heaters, or calendars, which finally kill the rubber and render it unfit for curing. The same thing can occur through insufficient vulcanizing."

Although it will be seen late on that in the conception of the porosity mentioned here, some true factors are lurking, it can hardly be called complete, for no explanation is offered for the fact why under-vulcanized rubber (even when the mixture has previously been well dried) is drawn in a porous state from the autoclave. It can also not be conceived why the last traces of water should have to be removed from the rubber, in order to get an article free from bubbles, when curing with direct steam, consequently in a space saturated with water vapor.

In the third place a statement by H. E. Potts[3] is offered:

"Porosity may occur as small holes in the interior of the article. This is a very common defect, due often to too rapid rise of temperature, or to presence of moisture in the mixture in the mixing. Hence arises the importance of careful moisture estimations on all ingredients. Various ingredients are added to mixing as remedies."

Here, also, no explanations are offered for the typical porosity of under-vulcanized objects, which would have emerged entirely homogeneous from the autoclave when applying a normal duration of the curing.

Finally a recent description, appeared in the *India-Rubber World*[4], entitled "Porosity in Rubber Goods":

"The porosity of rubber as it occurs in the manufacture of goods is due to one or more of several factors. Surface porosity is usually caused by condensation of steam on the goods during vulcanization. In the case of goods cured embedded in talo in open steam, drops of water sometimes percolate through the talo to the rubber and cause uneven vulcanization, by locally reducing the temperature. This danger may be practically eliminated by protecting the receptacle for the goods with a sheet metal covering to shed the water. In case of wrapped goods, moistening the wrapper will prevent blowing. Internal porosity is caused by moisture in the rubber or compound, by the use of a low grade, weak rubber in whole or in part, or by milling the stock in breaking down the gum or compounding.

"Porosity in moulded goods may be due to imperfect closure of the mould or to insufficient stock to fill the mould."

Here, a designation of the cases in which porosity has been observed is stated, instead of an explanation of the phenomenon, and the porosity of under-vulcanized rubber is again not mentioned.

Originally the Institute has favored the opinion that the internal posity of under-vulcanized rubber was connected with the escaping of air from the plasticized mass. For if plasticized rubber before having been mixed with sulphur is examined under the magnifying glass or the microscope, one sometimes observes air bubbles, and this is particularly the case when strong "ober-treatment" has been applied. The possibility did not seem excluded that, with a well-conducted vulcanization, on starting the cure the air is driven out of the mass, the latter having become very plastic on the initial heating. In favor of this view seemed also the fact that in factories making homogeneous heavy rubber articles, the rubber is preferably cured under strong pressure in moulds. Moreover, we thought that the formation of "Schwindflecken" (i.e., small dents, sometimes twisted, often communicating and abutting to the edge of the mould) had perhaps to be explained by this same escaping of air, although this was not the view of Ditmar and Thieben[5], who gave another explanation of this phenomenon.

Great difficulties were met with through interior porosity when experimenting with vulcanization in small moulds in the oil bath[6]. This became the inducement to give more attention to the phenomenon of the porosity.

During the first tests with the oil bath, the moulds were filled in such a way with the rubber-sulphur mixture that a space remained round the rubber. When the screws of the moulds were tightened up, this space was partly filled with a mixture which was pressed into it, but some empty space was still left. With a mixture which yielded an excellent cure in the autoclave, a strong porous product was obtained in the moulds in the oil bath. The latter showed, marvelously enough, a normal vulcanization coefficient, and there was no question of under-vulcanization.

[2] Guide de l'acheteur du caoutchouc manufacture, Paris (1912), 183.

[3] The Chemistry of the Rubber Industry, London (1912), 116.

[4] Vol. 54 (1916), 469.

[5] Kolloid-Zeitschr. 11 (1913), 80.

[6] Vide Communication of the Netherland Government Institute, Part V.

Acting upon the supposition that the air had more trouble to escape from these entirely enclosed moulds than from those used when curing in the autoclave, in which the rubber was directly in contact with steam, it was now tried to assist the passing of the air, by putting the rubber-sulphur mixture under strong pressure in moulds, wherein it could freely expand sideways. In order to obtain this pressure, a considerably thicker layer of the mixture than was necessary was put in the small mould, and the little round mould was now closed by the tightening of screws on the outside rim. Now and then there was really obtained after vulcanization a homogeneous disc, but by no means always, and the result was by far too uncertain to allow a "mechanical valuation" of the product.

To facilitate the escape of the air it was now tried to surround the rubber in the small moulds by a circular duct, which was brought into contact with the outer air by a small metal tube which protruded above the oil in the bath. Pressure was therefore excluded in this duct and air bubbles were to be easily driven out to it by the mechanical pressure on the mixture, which had become soft on heating. After vulcanization the surprising fact was to be observed that the rubber was more porous than ever had been found to be the case with rubber without the addition of inflating mediums. The whole of the circular duct was filled with rubber with bubbles, and even into the small metal tube a small quantity had percolated. On the other hand, this rubber again showed a normal vulcanization coefficient.

This marvelous phenomenon gave us the explanation of the interior porosity, at least for those cases wherein curing was carried out in the small moulds in the oil bath to a normal vulcanization coefficient. For it became clear that during our experiments in the oil bath, the rubber was inflated by a material present in all rubber, of which the volatilization remained behind with normal curing in the autoclave. This caused me to think of water, of which traces remain in well dried and well plasticized rubber. So, for instance, Fo17 found in normally plasticized rubber 0.2 to 0.3 per cent. moisture.

If this conjecture was correct, then the interior porosity could be prevented by taking care that there existed continually round the rubber a pressure equal to or higher than the pressure of the saturated water vapor at the temperature of the rubber-sulphur mixture. The most simple way of carrying out the theory entirely.

Three small cylinders of the same rubber-sulphur mixture were put into three strong glass tubes; to the first were added a few drops of water and the tube then sealed; the second glass tube was sealed without addition of water; the third glass tube was left open and drawn out at one side. The three tubes were heated simultaneously in an oil bath at 148 deg. C. for 11/2 hours. Of the open tube the drawn-out part protruded from the liquid. After this it was found that the mixture in the first tube was vulcanized to a perfectly homogeneous product, even to the microscope no air bubbles could be detected in a thin slice. The rubber in the second tube was porous after the cure, but by no means very strongly so. The mixture in the open tube, on the other hand, showed numerous bubbles; it had become a spongy mass and was strongly swollen.

It will be clear that the result obtained with the second tube must be explained by the fact that heating of the air, together with the evaporation of the air, together with the evaporation of the inherent moisture in the rubber caused a tension in the tube able to prevent part of the porosity, but not enough to eliminate it entirely.

The variable result, obtained with the powerfully screwed up, entirely closed moulds with the oil bath cure, must be explained in a corresponding way. When perfect fitting of the moulds and a saturation of the circular duct with water vapor, or a sufficiently high mechanical pressure was attained, then the rubber emerged without bubbles. If the moulds did not fit well (and this could repeatedly be observed by escaping gas bubbles), or if the mechanical pressure was not high enough, then the product became porous.

These tests had at the same time shown how to find a means of obtaining a product useful for the mechanical valuation by vulcanizing in the oil bath. One only had to take care that a sufficiently small quantity of water was present in order to keep this space saturated with water vapor during the curing. (This simple expedient has, indeed, been a great success, and the modus operandi with the oil bath, as used at the Institute, has been described in Communications of the Netherlands Government Institute, Part V.)

The necessary counter pressure to prevent interior porosity in the piece round the rubber can also be obtained in another way than by evaporating water. It seemed to me not without interest to prove this directly by an experiment, because a peculiar influence might be ascribed to the water vapor.

A small cylinder made out of rubber-sulphur mixture was again vulcanized in a glass tube fused at one end to an open mercury pressure gauge. In the narrow tube of the latter so much mercury was now poured that the difference of the levels amounted during vulcanization to 270 cm., which corresponds with a pressure at about 3½ atmospheres. The temperature of curing was 148 deg. C., at which temperature saturated water vapor has a tension of a trifle less than 4½ atmospheres.

The product obtained was perfectly homogeneous, and porosity entirely prevented. It should, however, be stated that the surface of the cured rubber had become somewhat tacky, which should undoubtedly be attributed to the action of the oxygen of the air at the high temperature of curing.

The preceding also offers an explanation of the good results obtained by curing processes in which the goods are heated under pressure in an indifferent gas.[8] It is especially stated in these patents that the formation of pores is prevented, without any explanation being offered.

If the interior porosity was in this way explained for rubber cured to a normal vulcanization coefficient, under circumstances such as were present during my first experiments with the oil bath, it, however, seemed not at once clear that the interior porosity of under-vulcanized rubber had to be ascribed to the same cause. Initially it has even been supposed that it had still to be imputed to an insufficient escape of the air. The question here arose, how it had to be explained that a rubber-sulphur mixture could yield with a normal duration of the vulcanization a product without pores, whereas this same mixture produced an entirely porous material when it had been under-vulcanized.

The consideration which here supplied the explanation was that the formation of pores, remaining even after cooling down, could only have been caused by tearng of the rubber or by a considerable permanent deformation of it, which was no more counteracted by the surrounding atmospheric pressure.

(To be continued)

[7] Vide Communications of the Netherlands Government Institute, Part IV, p. 113.

[8] Vide Hill and Bourn, Amer. Patent No. 661,177 and No. 735,059, and Eng. Patent No. 7159 (1901).

L. D. GARDNER
PRESIDENT

W. D. MOFFAT
VICE-PRESIDENT

W. I. SEAMAN
TREASURER

THE RUBBER AGE AND TIRE NEWS

W. M. MILNER
EDITOR

H. M. WILLIAMS
GENERAL MANAGER

H. B. SEYMOUR
BUSINESS MANAGER

Vol. IV | March 25, 1919 | No. 12

FOR several days after the signing of the War Revenue Law by the President, the impression prevailed throughout a considerable portion of the trade that rubber tires for motor vehicles ordered from manufacturers prior to February 25 were exempt from taxation. Many manufacturers accepted orders on this basis, believing that in so doing they were acting within the provisions of the law. A new ruling of the Treasury Department, however, directs that only such tires as were delivered to buyers before February 25 are to be considered tax free and that all deliveries made on and after that date are subject to taxation regardless of when the order was placed.

The misunderstanding by the trade was doubtless caused by the impression that goods were sold when the order was received and accepted, while in fact goods are not sold in a strictly legal sense until the sale is actually consummated, that is, until the goods are delivered.

In the sense of the new Revenue Law, the sale of an article is consummated only when title to the particular goods has passed from the manufacturer, producer or importer to the person to whom the goods are sold. Consequently, the passing of title is a question of fact dependent upon the intention of the parties to the transaction as gathered from the contract of sale and the surrounding circumstances. In the absence of an intention to the contrary the title is presumed to pass upon delivery of an article to the buyer, or to a carrier for the buyer, and as in the tire trade the custom is to consider the title as remaining with the manufacturer until goods are delivered, the date of delivery determines whether or not tires are subject to taxation.

It has further been ruled that goods shipped under consignment or shipped with bill of lading attached, have not been sold in the sense of the new act, since title in them has not passed from the manufacturer. The tax on goods coming under this classification is to be returned in the manufacturer's report for the month in which the title to the goods passed, as by payment of the purchase price, or otherwise. Seconds are subject to tax just as new tires.

The new War Revenue Tax on tires for motor vehicles is an excise tax, that is to say a toll levied by the Government upon the passage of title of the tire casing or inner tube. The manufacturer must collect the tax of 5 per cent upon the wholesale price of the article at the time the sale by him is completed, which is when title passes by delivery. The tax applies to all deliveries made after February 24, 1919, regardless of the date upon which the order for the particular goods was placed.

As to the dealer, he is privileged to collect from the consumer the 5 per cent tax passed on to him by the manufacturer, but nothing more. It is not legal for the dealer to collect from the consumer a tax on any merchandise upon which he has paid no tax.

This raises the point as to whether or not dealers will be called upon to pay to the Government a tax on tires in stock prior to February 25, 1919. It has been ruled in this respect that in no case does the dealer pay a direct tax to the Government. The only tax which he does pay is the tax charged to him on invoices covering deliveries from the manufacturer subsequent to February 24. This tax is to be paid by the dealer to the manufacturer, as itemized on the latter's invoice, the manufacturer in turn paying the tax to the Government. The manufacturer is considered by the Government as the primary source of tax collection, and he, and not the dealer, remits to the Government.

Penalties involving both fine and imprisonment may, under the law, be inflicted upon the dealer who endeavors to profiteer at the expense of the consumer under the War Revenue Law. In other words, the dealer is not justified in collecting from the consumer one cent more than the exact amount in dollars and cents paid by him as a tax to the manufacturer.

Another subject of importance to dealers is the case of replacements under guarantee, in which the 5 per cent tax is levied upon the adjustment price, provided this price is not greater than the wholesale price. Where the adjustment price is greater than the wholesale one, the tax is levied on the latter.

Though it may appear that the collection of the new tax places an undue burden upon the dealer, in reality the burden is no greater than that placed on the manufacturer, and the difficulties involved are really small. The Government has chosen to collect the tax primarily from the manufacturer for the reason that it is more practicable to do so than it possibly could be to collect direct from the consumer.

This new excise tax is a war measure. The rubber industry has in the past given its full support to war measures, and will certainly give the same support to the measure here discussed. A circular letter from the Pneumatic Tire Manufacturers' Division of the Rubber Association of America, containing interim advises on the War Revenue Law as affecting the tire industry, is published in full elsewhere in this issue of THE RUBBER AGE AND TIRE NEWS.

Rubber Association Officers, Directors and Committees

Preliminary to the printing of the 1919 Year Book of the Rubber Association of America, Harry S. Vorhis, secretary, has issued a complete list of the newly elected officers, directors, standing committees and divisional committees of the Association for the current year.

OFFICERS

President, Homer B. Sawyer, United States Rubber Company.
First Vice-President, Harry T. Dunn, The Fisk Rubber Company.
Second Vice-President, Frank A. Seiberling, The Goodyear Tire & Rubber Company.
Secretary and Treasurer, Harry S. Vorhis.

DIRECTORS

(Terms Expire 1922)

John S. Lowman, The Philadelphia Rubber Works Company.
A. D. Thornton, Canadian Consolidated Rubber Company, Ltd.
James N. Gunn, United States Tire Company.
Seneca G. Lewis, Pennsylvania Rubber Company.
John Morgan, McGraw Tire & Rubber Company.

(Terms Expire 1921)

Frank A. Seiberling, The Goodyear Tire & Rubber Company.
Harry T. Dunn, The Fisk Rubber Company.
Charles J. Davol, Davol Rubber Company.
William J. Kelly, Poel & Kelly.
C. W. McLaughlin, The Mohawk Rubber Company.

(Terms Expire 1920)

Homer E. Sawyer, United States Rubber Company.
Charles T. Wilson, Charles T. Wilson Company, Inc.
John A. Lambert, Acme Rubber Mfg. Company.
Paul W. Litchfield, The Goodyear Tire & Rubber Company.
G. W. Henne, The Mansfield Tire & Rubber Company.

EXECUTIVE COMMITTEE

Homer E. Sawyer, Chairman, United States Rubber Company.
Bertram G. Work, The B. F. Goodrich Company.
Harry T. Dunn, The Fisk Rubber Company.
F. A. Seiberling, The Goodyear Tire & Rubber Company.
Wm. J. Kelly, Poel & Kelly.
John A. Lambert, Acme Rubber Mfg. Company.

LEGISLATIVE COMMITTEE

Charles Neave, Chairman, General Counsel of the Rubber Association of America, Inc.
F. C. Van Cleef, The D. F. Goodrich Company.
Ernest Hopkinson, United States Rubber Company.

AUDITING COMMITTEE

Edward E. Huber, Chairman, Eberhard Faber Rubber Company.
Wm. J. Kelly, Poel & Kelly.

OUTING COMMITTEE

F. R. Henderson, Chairman, F. R. Henderson & Company.
A. A. Garthwaite, Lee Tire & Rubber Company.
L. P. MacMichael.

ARBITRATION COMMITTEES

(Terms Expire 1922)

Horace DeLisser, Chairman, Akax Rubber Company, Inc.
Andrew H. Brown, Meyer & Brown.

(Terms Expire 1921)

George A. Ludington, The Fisk Rubber Company.
Van H. Cartmell, Kelly-Springfield Tire Company.

(Terms Expire 1920)

R. B. Woodbury, Hood Rubber Company.
William H. Stiles.
Harold H. Henderson, F. R. Henderson & Company.

BANQUET COMMITTEE

(The appointment of a Banquet Committee has been held in abeyance for the present)

SPECIAL COMMITTEE ON UNIFORM CRUDE RUBBER CONTRACT AND NOMENCLATURE

Col. H. Stuart Hotchkiss, Chairman, United States Rubber Co.
William E. Bruyn, L. Littlejohn & Co.
George B. Hodgman, Hodgman Rubber Co.
Frederick C. Hood, Hood Rubber Co.
William J. Kelly, Poel & Kelly.
Paul W. Litchfield, The Goodyear Tire & Rubber Co.
Charles T. Wilson, Charles T. Wilson Co., Inc.
Homer E. Sawyer, ex-officio United States Rubber Co.

COMMITTEE ON RUBBER AND KINDRED PRODUCTS

Charles T. Wilson, Chairman, Charles T. Wilson Co., Inc.
George B. Hodgman, Hodgman Rubber Co.
Homer E. Sawyer, United States Rubber Co.
Bertram G. Work, The B. F. Goodrich Co.
Col. H. Stuart Hotchkiss, United States Rubber Co.
William J. Kelly, Poel & Kelly.
E. H. Huxley, United States Rubber Export Co., Ltd.
E. H. Broadwell, The Fisk Rubber Company.
William E. Bruyn, L. Littlejohn & Co.

OVERSEAS RUBBER COMMITTEE

Temporary Singapore Offices, 4 Collyer Quay, Singapore, S. S.

John Donaldson, Chairman, General Rubber Company.
W. T. Easley, Honorary Secretary, The B. F. Goodrich Company.
H. S. Godwin, Honorary Treasurer, Wilson Holgate & Company.
J. J. Blandin, Orient Rubber Company.
R. J. Obott, Eastern Rubber Company.

MECHANICAL RUBBER GOODS MANUFACTURERS' DIVISION

Chairman—
John J. Voorhees, Voorhees Rubber Mfg. Co.
Vice-Chairman—
W. H. Yule, The B. F. Goodrich Company.
Executive Committee—
John J. Voorhees, Chairman, Voorhees Rubber Mfg. Company.
W. H. Yule, The B. F. Goodrich Company.
George E. Hall, Boston Woven Hose & Rubber Company.
Guy E. Norwood, Republic Rubber Corporation.
Henry Spadone, Gutta Percha & Rubber Mfg. Company.
C. C. Case, Rubber Goods Mfg. Co.
C. Edward Murray, Empire Tire & Rubber Corporation.
George A. Wies, Eureka Fire Hose Mfg. Co.
W. T. Cole, Fabric Fire Hose Co.

RUBBER SUNDRIES MANUFACTURERS' DIVISION

Chairman—
Charles J. Davol, Davol Rubber Company.
Vice-Chairman—
H. A. Bauman, The B. F. Goodrich Company.
Executive Committee—
Charles J. Davol, Davol Rubber Company, Chairman.
H. A. Bauman, The B. F. Goodrich Company.
E. E. Huber, Eberhard Faber Rubber Company.
S. H. Jones, United States Rubber Co., Goodyear's Glove Division.
G. B. Hodgman, Hodgman Rubber Company.
W. H. Balch, The Faultless Rubber Company.
W. S. Davison, The Miller Rubber Company.

RUBBER RECLAIMERS' DIVISION

Chairman—
Francis H. Appleton, F. H. Appleton & Son, Inc.
Vice-Chairman—
Clark W. Harrison, Bloomingdale Rubber Co.
Executive Committee—
Francis H. Appleton, F. H. Appleton & Son, Inc., Chairman.
Clark W. Harrison, Bloomingdale Rubber Co., Vice-Chairman.
E. A. Anderson, Rubber Regenerating Company.
John S. Clapp, E. H. Clapp Rubber Company.
R. A. Low, U. S. Rubber Reclaiming Co., Inc.
John S. Lowman, Philadelphia Rubber Works Co.
Joseph F. McLean, Pequanoc Rubber Co.

RUBBER PROOFERS' DIVISION

Chairman—
H. M. Dannenbaum, The Schwarzwaelder Co.
Vice-Chairman—
J. J. Clifford, Plymouth Rubber Co.
Executive Committee—
H. M. Dannenbaum, The Schwarzwaelder Co., Chairman.
J. H. Clifford, Plymouth Rubber Co., Vice-Chairman.
J. V. McHose, Scioto Rubber Co.
E. Buecher, Vulcan Proofing Co.
James Meade, Meade Rubber Co.

RUBBER AND FIBRE SOLE MANUFACTURERS' DIVISION

Chairman—
C. H. Oakley, Essex Rubber Company.
Vice-Chairman—
William M. Gunlock, United States Rubber Company.
Executive Committee—
C. H. Oakley, Essex Rubber Company, Chairman.
William M. Gunlock, United States Rubber Co.
George B. Dryden, Dryden Rubber Co.
George E. Hall, Boston Woven Hose & Rubber Co.
E. T. Packard, Avon Sole Co.
Charles Measure, Federal Rubber Company.

FOREIGN TRADE DIVISION

Chairman—
E. H. Huxley, United States Rubber Export Co., Ltd.
Vice-Chairman—
R. H. Daniels, The Goodyear Tire & Rubber Co.
Executive Committee—
E. H. Huxley, United States Rubber Export Co., Ltd., Chairman.
Henry G. Tyer, Tyer Rubber Co.
Wm. B. Laighton, Hood Rubber Co.
A. R. Gormully, Ajax Rubber Co., Inc.
A. S. Hardy, Manhattan Rubber Mfg. Co.
R. H. Daniels, The Goodyear Tire & Rubber Co.
G. C. McCullough, Pennsylvania Rubber Co.

HARD RUBBER MANUACTURERS' DIVISION

Chairman—
Philip Campbell, American Hard Rubber Co.
Vice-Chairman—
H. Weida, The India Rubber Co.
Members—
American Hard Rubber Co., Philip Campbell.
The B. F. Goodrich Co., MacC. Shank.
The India Rubber Co., H. Weida.
Luzerne Rubber Co., Bruce Bedford.
Vulcanized Rubber Co., Judson Drayton.

TRAFFIC DIVISION

Chairman—
George F. Hichborn, United States Rubber Co.
Manager—
A. L. Viles.
Executive Committee—
George F. Hichborn, United States Rubber Co., Chairman.
R. G. Kreitler, The Goodyear Tire & Rubber Co.
A. D. Phillips, The Fisk Rubber Co.
E. L. Tragesser, The B. F. Goodrich Co.
A. L. Viles, Rubber Association of America, Inc.

PNEUMATIC TIRE MANUFACTURERS' DIVISION

Chairman—
George M. Stadelman, The Goodyear Tire & Rubber Co.
Vice-Chairman—
E. H. Broadwell, The Fisk Rubber Co.
Executive Committee—
George M. Stadelman, The Goodyear Tire & Rubber Co., Chairman.
E. H. Broadwell, The Fisk Rubber Co., Vice-Chairman.
Joseph C. Weston, United States Tire Co.
W. O. Rutherford, The B. F. Goodrich Co.
H. L. McClaren, Ajax Rubber Co., Inc.
W. W. Duncan, Hood Rubber Co.
A. G. Partridge, Firestone Tire & Rubber Co.
John Kearns, Lee Tire & Rubber Co.
Seneca G. Lewis, Pennsylvania Rubber Co.
W. W. Wildman, The Portage Rubber Co.
H. H. Durr, The Victor Rubber Co.
Otis R. Cook, Kelly-Springfield Tire Co.
J. E. Baum, Empire Tire & Rubber Corporation.
W. O'Neil, The General Tire & Rubber Co.
R. T. Griffiths, The Miller Rubber Co.

SOLID TIRE MANUFACTURERS' DIVISION

Chairman—
A. G. Partridge, Firestone Tire & Rubber Co.
Vice-Chairman—
Joseph C. Weston, United States Tire Co.
Executive Committee—
A. G. Partridge, Firestone Tire & Rubber Co., Chairman.
Joseph C. Weston, United States Tire Co., Vice-Chairman.
G. M. Stadelman, The Goodyear Tire & Rubber Co.
W. O. Rutherford, The B. F. Goodrich Co.
E. H. Broadwell, The Fisk Rubber Co.
T. C. Marshall, Kelly-Springfield Tire Co.
W. W. Duncan, Hood Rubber Co.

RUBBER CLOTHING MANUFACTURERS' DIVISION

Chairman—
N. Lincoln Greene, United States Rubber Co., Clothing Division.
Vice-Chairman—
George G. Bryant, Chicago Rubber Clothing Co.
Executive Committee—
N. Lincoln Greene, United States Rubber Co., Clothing Division, Chairman.
George G. Bryant, Chicago Rubber Clothing Co.
S. T. Hodgman, Hodgman Rubber Co.
C. Kenyon, Jr., C. Kenyon Co.
Wm. M. Tenney, Clifton Mfg. Company.
E. C. Klauber, Rosenwald & Weil.

BOOTS AND SHOES MANUFACTURERS' DIVISION

Chairman—
George H. Mayo, United States Rubber Co.
Vice-Chairman—
Francis S. Dane, Hood Rubber Company.
Members—
Apsley Rubber Co.
Beacon Falls Rubber Shoe Company.
Bourn Rubber Company.
The Firestone Tire & Rubber Company.
Converse Rubber Shoe Company.
The B. F. Goodrich Company.
Goodyear Rubber Company.
Hood Rubber Company.
La Crosse Rubber Mills Co.
Lambertville Rubber Co.
Mishawaka Woolen Mfg. Co.
United States Rubber Company.

News Jottings in the Rubber Trade

A New Pink Dental Compound—Rubber Chemists to Prepare for Convention—Paul Litchfield and Party Return—George B. Hodgman's Son Decorated—Other Items of Interest

A New Denture Rubber

The inability to produce dental rubber in a natural pink color with sufficient strength to retain artificial teeth on the plate under the stress of mastication has, heretofore, made it necessary to use dental rubbers with high caoutchouc content for the palatal portion of the denture, in which the teeth were bedded, and to utilize a weak pink rubber as a veneer for that portion of the plate which comes in contact with the cheek and lip, in order to approximate natural gum color.

The S. S. White Dental Manufacturing Company, Philadelphia, Pa., has recently been able to perfect a new development, which marks a new era in dental prosthetics, and for the first time makes possible rubber dentures carrying artificial teeth which are made of a single rubber compound for the whole plate, in a color which closely approximates that of mouth tissues.

This new compound is said to contain the largest percentage of pure rubber ever used in a pink vulcanite. It takes a beautiful and lasting polish, is dense and of a good weight for both upper and lower sets. Prior to vulcanization, it is plastic and easy to work, and the technique required for packing, curing and finishing is the same as for good work with any other rubber. In using it there is no question as to where the "base" should stop and the veneer should begin; no danger of the latter polishing through and exposing a red, brown or other colored base, because the base is all of one compound and all of one color.

Goodyear Executives Return

Paul W. Litchfield, Ralph Upson and C. C. Slusser, of the Goodyear Tire & Rubber Company, Akron, Ohio, arrived in New York on Feb. 15, returning from Europe where they had spent three months investigating trade conditions and particularly balloon production. While abroad they visited all the principal balloon factories of England, France and Italy. They also visited points of interest along the western battlefront, including St. Mihiel, Verdun and Château-Thierry.

Corporal Hodgman Honored

Corporal Alfred P. Hodgman, second son of George B. Hodgman, president of the Hodgman Rubber Company, Tuckahoe, N. Y., has been decorated in France with the *Croix de Guerre* for bravery during one of the German offensives last summer when he advanced beyond the front lines and rescued several wounded French soldiers. Corporal Hodgman belongs to the United States Army Ambulance Service and was attached to the French Army.

Biggs Boiler Works Enlarging

The Biggs Boiler Works Company, the well-known builders of vulcanizers, machinery and equipment for rubber factories, Bank and William Streets, Akron, Ohio, are having plans prepared for a 40x330-ft. addition to their plant.

H. P. Pearson Opens Office

Herbert P. Pearson, formerly general manager of the Cravenette Company, New York City, has severed his connections with that concern and has opened offices in the Aeolian Hall, 33 West 42nd Street, New York City, as consulting expert on water-proofing, grease-proofing, rust-proofing, and similar problems.

Rubber Section of A. C. S.

The Rubber Section of the American Chemical Society is planning to become a division of the society. By-laws similar to those of the other divisions have been drawn up and are being considered by the executive committee of the section, which is composed for this year of John B. Tuttle, chairman, Firestone Tire & Rubber Company, Akron, Ohio; Dr. David Spence, Norwalk Tire & Rubber Company, Norwalk, Conn.; George Oenslager, The B. F. Goodrich Company, Akron, Ohio; Dr. Lothar E. Weber, consulting chemist, 729 Boylston Street, Boston, Mass.; Dr. H. E. Simmons, Municipal University of Akron, Akron, Ohio; L. J. Plumb, United States Rubber Reclaiming Company, 30 East 42nd Street, New York City, and A. H. Smith, secretary Bureau of Standards, Washington, D. C. This matter will be presented at the council of the American Chemical Society at the meeting it will hold in Buffalo, N. Y., in April.

Arnold H. Smith, secretary of the section, has sent to a large number of rubber laboratories and men prominent in the chemical side of the rubber industry a letter urging more interest and activity for the Rubber Section.

The Jar Ring Committee of the Rubber Section is in active co-operation with the work being done in this line by the Department of Agriculture, and an announcement concerning these activities will soon be forthcoming.

Hartford Rubber's Large W. S. S. Purchases

Among the chapters of war work recorded in the annals of the rubber industry, are activities that have not received widespread publicity, but are none the less meritorious and deserving of mention. For instance, the Hartford Rubber Works, Hartford, Conn., a subsidiary of the United States Rubber Company, New York City, in addition to war manufacturing has been conducting a war savings stamp campaign, with the result that last year the sales of these stamps at the factory amounted to $40,000. Less than 2,000 employes were purchasers, which made the sale average about $20 each for these buyers. This year the goal has been set for $25,000 for the first six months, and so far the weekly sales have averaged more than $800. Approximately 80 per cent of the employes have subscribed $10 or more for the first half of this year.

Seiberling Speaks to Deaf Mutes

One of the most important groups of rubber workers in Akron, Ohio, is the colony of deaf mutes, who are employed in the numerous rubber factories of that city. At their second annual dinner held last week, at which 250 mutes were present, President F. A. Seiberling, of the Goodyear Tire & Rubber Company, was the principal speaker, his talk being interpreted in the "sign" language, as he proceeded, by an assistant.

Goodyear Declares Dividends

The Goodyear Tire & Rubber Company, Akron, Ohio, regular quarterly dividend of 3 per cent on common stock was paid on March 1 to stockholders of record February 15.

R. A. A. Traffic Division

The Traffic Division of the Rubber Association of America, through its manager A. L. Viles, directs the attention of Association members to the following advices issued by the Allegheny and Eastern Regions of the United States Railroad Administration respecting the cancellation on February 15th of the permit system now applicable on domestic freight for New York:

"Please cancel, effective February 15, 1919, the embargoes placed as a war emergency January 15, 1918 against carload domestic freight for Manhattan Island, the Bronx (New York City) and station deliveries on New York Harbor, including Brooklyn Terminal Companies, which freight is now being moved under F. T. C. permits issued by the Freight Traffic Committee, North Atlantic Ports.

"Effective as above such freight may move without permits subject to embargoes of the delivering railroads.

"No change will be made in the method of permitting export carload freight for the present; and carload domestic freight must not be accepted for other than regular station deliveries. Reconsignment for export or lighterage deliveries will not be allowed."

Large Goodyear Enlistments

The eighty-second gold star has been added to the big service flag of the Goodyear Tire & Rubber Company, Akron, O. Although three months have now passed since the signing of the armistice, each week ushers into the Goodyear office the name of a former employe who gave his life for his country. This high number of gold stars in the Goodyear service flag is accounted for in the unusually large number of men entering the ranks, 6,500 men having enlisted in their country's service from this company. To date 2,000 of these have returned and resumed their former occupations.

Thermoid Men Meet

Philadelphia, Boston and New York branch representatives of the Thermoid Rubber Company, Trenton, N. J., met recently in New York to discuss general business conditions and plans for the coming year. "New York Branch cocktails, Boston Branch oysters, Philadelphia Branch soup, Trenton fish, F. O. B. cigars and Q. D. cigarettes" were part of the tempting menu of the evening banquet.

Goodyear's Rubber Consumption

The total cultivated rubber producing acreage of the world is now about 2,000,000, of which 1,600,000, or 80 per cent, is controlled by Great Britain. Yet the United States uses three-fourths of the world's output of crude rubber. The Goodyear Tire & Rubber Company, of Akron, Ohio, owns its own rubber plantations in Sumatra where 20,000 acres of former jungle land are now given over to rubber cultivation. This company, recently issued the statement that it uses about ten per cent of the world's supply—as much as the Central Powers used before the war.

H. Muehlstein in New Quarters

H. Muehlstein & Company, New York City, announces that owing to a fire which partly destroyed its buildings, it has moved its offices to new quarters, located at the northeast corner of 125th Street and Lexington Avenue, New York City.

News Notes of the Rubber Trade

Rubber Association's Clothing Division—Firestone to Build Stadium—Rubber Products Expanding—Republic Stockholders Meet—Chemical Society Honors Tuttle

Rubber Clothing Division Formed

At a meeting held at the office of the United States Rubber Company, 130 Essex Street, Boston, Mass., on March 4th, 1919, the Calendered Rubber Clothing Section of the Rubber Clothing Manufacturers' Division of the Rubber Association of America, Inc., was formed with the following officers:

N. Lincoln Greene, Chairman; George G. Bryant, Vice-Chairman; Harry S. Vorhis, Secretary.

Executive Committee

N. Lincoln Greene, Chairman, United States Rubber Co.; George G. Bryant, Chicago Rubber Clothing Company; S. T. Hodgman, Hodgman Rubber Company; Wm. M. Tenney, Clifton Mfg. Company.

The membership of the Section is as follows:

Apsley Rubber Company, Hudson, Mass.; Archer Rubber Company, Milford, Mass.; Boston Woven Hose & Rubber Company, Cambridge, Mass.; Cambridge Rubber Company, Cambridge, Mass.; Chicago Rubber Clothing Company, Racine, Wis.; Clifton Manufacturing Company, Boston, Mass.; The B. F. Goodrich Company, Akron, Ohio; Hodgman Rubber Company, Tuckahoe, N. Y.; United States Rubber Company, New York City.

A Firestone Stadium

Akron is soon to have one of the most modern athletic fields in Ohio, according to Ed. Day, Recreation Director of the Firestone Tire and Rubber Company. Plans have just been completed by the company for the erection of the Firestone Stadium on S. Main-st., near Firestone Park Boulevard.

Day said Wednesday the stadium will cost about $50,000. Seven tennis courts, one football field, one baseball diamond, one soccer field, and ¼ mile running track will complete the field. The stadium furnishes parking space for 300 autos.

Plans are under way, Day said, to install a rifle range and trapshooting equipment on the field. The stadium, when completed, will be the largest of its kind in Ohio.

The seating capacity of the stadium has been announced as 15,000. It will have three entrances, Firestone Park Boulevard being the main entrance.

Construction work will probably be started during the latter part of March, and it is the hope of Day to have the stadium completed in time for baseball and football games this year. Every effort will be made to put up the stadium in record breaking time.

Five refreshment stands will be scattered over the grounds.

It is the hope of Day that amateur athletic events may be held at the stadium which will bring some world-famed athletes here.

J. B. Tuttle Chemical Abstractor

John B. Tuttle, manager of the research department of the Firestone Tire & Rubber Company, Akron, Ohio, has accepted to act as abstractor of rubber literature in the department of rubber and allied substances for *Chemical Abstracts*, a publication of the American Chemical Society. Mr. Tuttle succeeds in this work Roxley F. Weber, deceased.

Rubber Products to Enlarge

Owing to the increased demand for its manufactures, the Rubber Products Company, manufacturers of druggists' sundries and "Stronghold" tires, Barberton, Ohio, has decided upon plans to enlarge both its plant and office capacities, according to an announcement recently made by W. A. Johnston, president of the company.

A new two-story wing will be built, extending southward from the present factory to its private switch along the Erie Railroad. This wing will be used for shipping rooms and storage purposes. The present shipping rooms and storage space will be converted into tire factory space, in which tire-making machinery and vulcanizers will be installed. According to President W. A. Johnston, this will increase the company's tire production capacity to 500 tires per day.

An entirely separate building, approximately 50 x 100 feet, will be built to accommodate equipment for impregnating cord tire material and drying apparatus. The offices will be extended some thirty feet to provide additional room for the accounting and filing departments.

Republic Holds Annual Meeting

The Republic Rubber Corporation, Youngstown, Ohio, has held its annual meeting of shareholders. Gross sales for the year ended December 31, 1918, amounted to $15,749,627.91, while net profits amounted to $1,002,102.21, after deduction of depreciation and interest charges.

The company has been experimenting and testing for the past year a new cord tire, which will soon be formally announced to the trade. Guy E. Norwood, president of the Republic Rubber Corporation, announced that the volume of business for 1919 will considerably exceed that of last year. T. E. Borton was elected a director of the company.

Big Increase in Rubber Stocks

(Special Akron Correspondence)

The phenominal increase in Kelly-Springfield stock and the steady rise Goodrich common has held the attention of rubber men in Akron during the past few weeks. Kelly has more than doubled in price and when quoted at 115 there was a strong buying movement.

Their statement for the year ending December 31, 1918, shows net income of $4,365,227 as against $2,452,815 in 1917. The statement shows a surplus in 1918 of $9,814,139 (before federal taxes) as against $5,705,633 in 1917.

The B. F. Goodrich common gained over seven points last week. The Goodrich statement for 1918 shows a surplus of $30,619,987 (before federal taxes) as against $20,173,379 in 1917. The statement shows the book value to be about $62.20 per share.

Sweeney & Company, Inc.

E. C. Sweeney, Jr., announces the formation of the corporation Sweeney & Company, Inc., which has taken over the offices of Obalski & Sweeney, Inc., at 59-61 Pearl Street, New York City, and will conduct a crude rubber importing and dealing business.

Rubber Trading Changes Form

The Rubber Trading Company, New York City, has been dissolved by unanimous consent of its stockholders, and a co-partnership has been formed to take over the business.

The name of the co-partnership is Rubber Trading Company and the members are: William T. Baird, Collier W. Baird, Robert Lyle Baird, as general partners, and Robert B. Baird as a special partner.

Business will be continued at the old address 9-15 Murray Street, New York City.

Obituary Notes

Charles A. BeSaw

Charles A. BeSaw, president of the BeSaw Tire & Rubber Company, Hartville, Ohio, and Ardmore, Oklahoma, an inventor of the BeSaw process for reclaiming rubber, died at Guthrie, Oklahoma, on February 6 and was buried in Canton, O.

Mr. BeSaw was born near Akron, Ohio, and first entered the rubber business in 1900, when he was employed in the technical department of The Diamond Rubber Company. His later connections were with the Milwaukee Rubber Works, Milwaukee, Wis., the Firestone Tire & Rubber Company, Akron, Ohio, the Swinehart Tire & Rubber Company, Akron, Ohio, and the Canton Rubber Company, Canton, Ohio, always in technical capacities. He was also at one time general superintendent of the Knight Tire & Rubber Company, Canton, Ohio.

In 1916, Mr. BeSaw acquired control of the Quality Rubber Company, Hartville, Ohio, changed its name to BeSaw Tire & Rubber Company, and became president and general manager of the concern.

The following year the firm's capital was increased to $1,000,000 and a branch factory was built in Ardmore, Oklahoma, Mr. BeSaw then making his residence in Guthrie, where death found him.

Andrew A. Allan

Andrew A. Allan, a director of the Canadian Consolidated Rubber Company, Limited, Montreal, Canada, died at the Royal Victoria Hospital in that city on February 11 following a surgical operation.

Born in Montreal, Mr. Allan was educated in Rugby, England, and in France. He was a son of one of the founders of the Allan Line, a steamship company operating between Montreal and British ports and president of the Shipping Federation of Canada. His financial interests were varied and extensive, and he became a director of the Canadian Consolidated in 1917.

Shunzo Takaki

Mitsui & Company, Limited, Tokio, Japan, and New York City, the largest trading company of Japan and well known as importers of crude rubber, lost one of its most able members in the person of Shunzo Takaki, who died in New York City on January 2, at the age of 36 years.

Shunzo Takaki was a son of Baron Kanhiro Takaki, and was born in Tokio, Japan.

F. R. Gillespie

F. R. Gillespie, of Hammell & Gillespie, dealers in compounding materials, New York City, died recently at the age of seventy-five. He was an uncle of William F. Gillespie, of the Stamford Rubber Supply Company, Stamford, Conn., and had devoted his entire commercial life to the rubber compounding material business.

TIRE NEWS

The Show Window—Its Value to the Tire Dealer

By H. O. Nadler and T. M. Armstrong

In the previous article of this series, which appeared in the February 10, 1919, issue of the Rubber Age and Tire News, *the value of the show window as a selling force was pointed out. The essentials for the proper layout for show windows were covered and were grouped under the following head: (1) Necessity of Background. (2) Proper lighting arrangements. (3) Seasonableness in Display. (4) How to Handle Crepe Paper. Directions also were given for the erection of two attractive spring displays, illustrated by sketches and photos.*

The value of a good original idea cannot be underestimated. Originality of ideas is not a gift. A person who can produce new ideas is one who has cultivated the art of thinking for himself. If a dealer has an original idea for his window he should not fail to work it out. If it is his first or second attempt at making window displays he will probably lack the confidence to put in a display worked out entirely from his own idea. To hit upon a new idea for a display is one part of the work. To carry out this idea in a practical manner is another. As soon as the window dresser acquires confidence he should have little or no trouble in working out a good practical display that will be attractive and will create the desire to buy. There is no doubt that many good ideas, not only in displaying but in all other lines of endeavor are lying dormant in the backs of many heads. After a dealer has installed several displays he will become more confident and as new ideas present themselves he will unconsciously cultivate this confidence. The results of confidence will soon be seen in the improvement in each successive display.

A Simple But Attractive and Effective Window Display

If the dealer has an employee who shows a little talent in display work, he should show interest in his work and give him a chance to develop. Many an expert window display-man has grown out of a clerk because he had an artistic sense of arrangement and knew his goods. A successful salesman must know and believe in his line and displaying is only one form of selling: creating a desire to buy. To create this desire and develop a display to the highest point of effectiveness the displayman must know his line of goods thoroughly.

There is often a tendency to display too great a quantity of merchandise in one window. It is a common sight to see a window containing a dozen or more tires and a general assortment of accessories in such numbers as to give the appearance that there is a sample, in the window, of every piece of merchandise in the store. One tire well displayed will attract more attention than a display of large quantities of merchandise with no one article standing out prominently. A comparison of the two accompanying photos shows this difference to a marked degree. The first photograph is an illustration of the artistic arrangement of one tire worked out in a very simple but attractive manner, the second shows overdisplay in the extreme. If the passerby was actually in the market for auto accessories he would no doubt be attracted by the merchandise displayed but there is no one thing that stands out prominently enough to create the desire to buy. It must be remembered that the average passerby is usually bent on business and is in a hurry. He has little time to stop and your display must be forceful and stand out if it is to draw his attention.

A person passing the window shown in the second photograph and glancing into it is not likely to carry away an impression of the display. The picture flashed to the mind through the eye would be a general assortment of merchandise with no one article standing out to leave a lasting impression. On the other hand, one passing the window containing the display shown in the first photograph would immediately be impressed by the attractive yet simple manner of displaying the tire. This tire would have the entire attention and, no doubt, would attract attention to the brand of tire. Even if the passer-by were in a hurry he would have very little difficulty in taking in the entire display in one glance. The color scheme would help him to carry away an impression that would not be forgotten quickly. If this person passed the same window a week or two later he would look into the window expectantly and if he saw another attractive display his thoughts would instantly revert to the other display he had seen in that same window. The two impressions would tend to reinforce each other. Now should this passer-by happen to be a motorist and need a new tire, say, several weeks later, the minute he thought of tires the pictures of the two displays would come before him. That dealer's window impressed him; the store had a progressive air; the dealer must be progressive, and the man interested would enter the store and look over the merchandise, giving the dealer an opportunity to sell him.

By comparing these two photographs and thinking for a minute of the effect that they would have on the passer-by there is no doubt that every tire dealer will see the value of an attractive yet simple display. The display shown in the first illustration can be copied by any dealer with very little labor and expense. The side wings and center panel were built of composition-board. The center panel is covered with cretonne crepe paper and set off by a frame of composition-board. The color scheme was French blue and brown. Silver will prove a very good substitute for brown and will provide a very pleasing color combination.

Every article has one or more selling

points that stand out prominently. Every brand of tire has numerous features that are conclusive arguments as to the merits

AN OVERCROWDED WINDOW

of that particular brand. If the dealer will follow closely the advertisements of the manufacturers of the various lines he carries he will find many selling points that can be worked into displays very easily. For instance if a tire is to be displayed the first step is to refer to booklets and placards advertising the tire, in search of a good selling point. Select a forceful argument that will create a desire to buy. Select the strongest argument and concentrate on that argument as the theme of your display.

W-S-M Solid Tire Fitting Presses

The tremendous growth of the use of motor trucks within the past few years, coupled with the importance of prompt service in changing tires and the resulting multiplication of solid tire service stations throughout the country, has created a large demand for tire fitting presses.

A little over a year ago the problem of supplying tire fitting presses suitable for general use throughout the country was put up to the Wellman-Seaver-Morgan Company, Cleveland, Ohio, and Akron, Ohio, and its broad engineering knowledge and experience in the construction of heavy machinery was combined with the experience gained by tire manufacturers to produce a type of tire applying press, which has proved to be satisfactory to all the leading manufacturers of solid rubber tires, who have adopted it as standard.

Five hundred of these presses were built the first year and they are now leaving The Wellman-Seaver-Morgan Company's plant at Akron, Ohio, at the rate of thirty-five a week—fifteen to twenty presses a week often being taken by a single tire company for its dealers.

That the press is giving real service is evidenced by the records of some of the dealers. For instance, there are records of removing front wheels, pressing off an old tire, installing a new tire, and remounting the wheel in seven minutes. The same work has been done with rear wheels and dual tires in forty-five minutes.

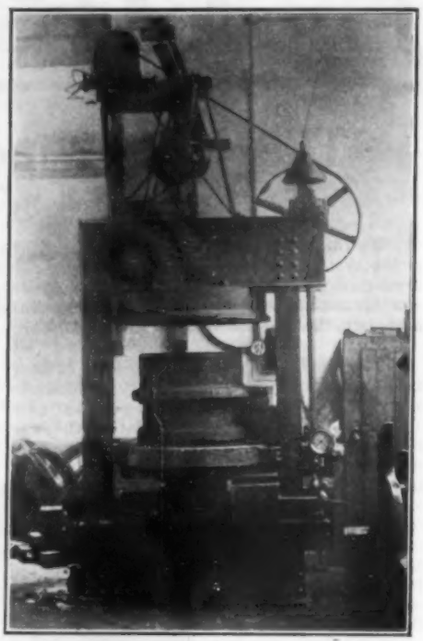
While on the subject of service, mention should be made of the Wellman-Seaver-Morgan tire press service department, the purpose of which is to see that every press in the field is working properly. Careful record is kept of each press shipped and this is followed up at intervals for inspection. Dealers are instructed as to the proper method of running the press and given many valuable suggestions as to the best method of applying and removing tires.

The W-S-M press has become a necessity for all service stations. In its design, the factors of speed, simplicity, and strength have been given foremost consideration.

The press consists of an upper and lower platen held in a frame of "I" beams. The lower platen is moved by a ram working in a cylinder and actuated by a hydraulic pump. The press is equipped with pressure gauge, relief valve, control valve.

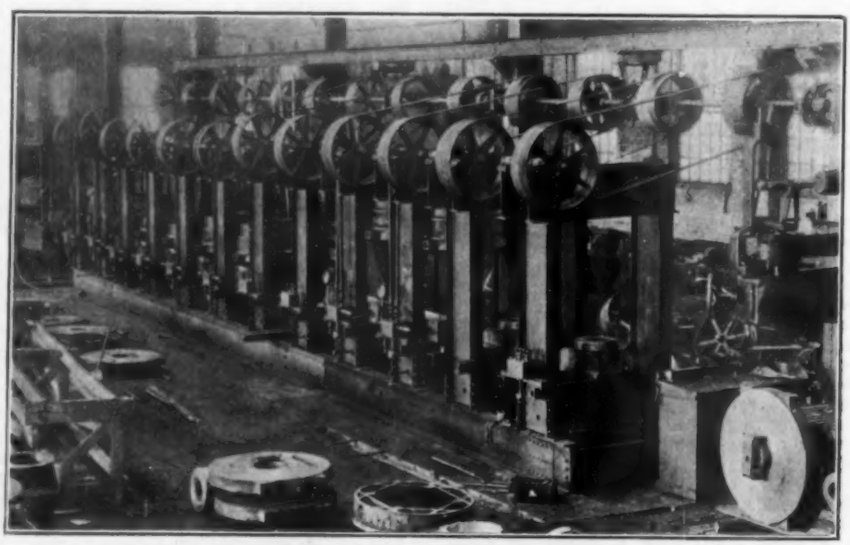
To mount a tire, the ram is lowered, the wheel is placed on lower platen and tire in position above it. The belt is thrown to tight pulley. The control valve is then closed.

To demount tire, a ring is placed on lower platen just large enough to clear wheel which is placed upon it. A second ring, or a set of blocks as is sometimes used, is placed on the circumference of tire. The control valve is then closed and the tire pressed down off of wheel.



W-S-M TIRE APPLYING PRESS

All presses are designed to mount and demount all sizes up to the largest solid tire built—42 x 14 inches.



TESTING PRESSES AT WELLMAN-SEAVER-MORGAN PLANT

Jones Back Home at Goodrich

Lieut.-Col. A. B. Jones, vice-president of The B. F. Goodrich Rubber Company, Akron, Ohio, has returned to his home. He was the supreme head of the Red Cross work in France during the last three months, having succeeded as Commissioner for France Colonel Harvey Gibson when Gibson became chairman of the Commission for Europe. Colonel Jones had 6,500 men and women under his direction and was responsible for an expenditure of about $5,000,000 a month.

The War Revenue Tax and the Tire Trade

In a circular letter dated March 5 the substance of which was published in THE RUBBER AGE AND TIRE NEWS of March 10, the Pneumatic Tire Manufacturers' Division of the Rubber Association of America, announced that a committee had been appointed to investigate fully the provisions of the War Revenue Tax and to confer with the Treasury Department officials at Washington in the matter of regulations to be issued with reference to the same. This committee has been advised that said regulations will in all probability be issued next week, and in the interim advises as follows under date of March 11:

I. Effective Date

"The tax is imposed on articles sold on and after February 25, 1919.

II. Sale—not Manufacture—Subject to the Tax

The excise taxes in question are levied upon the manufacturer's, producer's or importer's *sale* of articles and not upon the manufacture of such articles. Hence no articles manufactured, produced or imported need be covered in tax reports until the particular articles are sold.

III. Sale Consummated When Title Passes

It should always be borne in mind that a sale of an article is consummated in the sense of this new Revenue Act only when title to the particular goods has passed from the manufacturer, producer or importer to the person to whom the goods are sold.

When title passes is a question of fact dependent upon the intention of the parties as gathered from the contract of sale and the surrounding circumstances. In the absence of an intention to the contrary the title is presumed to pass upon delivery of an article to the buyer, or to a carrier for the buyer. In the case of goods sold under consignment where title is reserved until payment of the purchase price in full, the tax attaches upon such payment, or when the title passes if before the completion of the payments.

As we understand the custom in the industry in regard to back orders, title does not pass until goods are delivered; hence deliveries after February 24, 1919, on back orders accepted prior to February 25, 1919, are taxable.

IV. Sales to the Government, Etc.

All goods sold to State, City or Municipal Governments are exempt from tax and your Committee is informed that this exemption will be extended to sales to the United States Government.

However, for subsequent inspection by the Internal Revenue Commissioner, invoices or other records should be preserved, showing:

1. Kind of goods.
2. Date of invoice.
3. Amount of invoice.
4. Name and address of purchaser.

The Internal Revenue Commissioner advises that sales to telephone and telegraph companies, and to the Railroad Administration, Red Cross, Y. M. C. A., etc., are subject to the tax.

V. Trailers

Trailers (either two or four wheeled) are not motor vehicles in the sense of the new Revenue Act. Hence tires, tubes, parts or accessories therefor are not subject to the excise tax.

However, inasmuch as it does not appear feasible for manufacturers of tires, tubes, parts and accessories to determine at the time of the sale of such articles to dealers whether or not these articles are ultimately to be resold by the dealer for use in connection with trailers, it is suggested that on all sales of tires, tubes and accessories to persons other than manufacturers, producers or importers of motor vehicles, the tax be levied and remitted to the Government. Then in case any particular goods are later sold by the dealer (or other person than the manufacturer), the dealer can submit to the rubber manufacturer, producer or importer, an affidavit showing that the particular goods were sold for use on, and were applied to trailers. Thereupon the rubber manufacturer may remit the tax originally collected on the particular goods to the dealer and in his next month's report to the United States Government claim a refund for the tax amount so returned to the dealer.

VI. Sales to Manufacturers

Broadly stated, it is the rule under the new Act that sales to manufacturers of motor vehicles are exempt from tax where sold to the manufacturer for original equipment only.

Tires, inner tubes, parts or accessories, enumerated in Subdivision 3, sold by the manufacturer, producer or importer thereof to manufacturers, producers or importers of articles enumerated in Subdivisions 1, 2 and 3 of Section 900, are exempt from the tax imposed by Subdivision 3, only when the tires, inner tubes, parts or accessories, are bought and sold for use in the manufacture of, or for sale on, in connection with, or with the sale of articles enumerated in Subdivisions 1, 2 and 3, and taxable thereunder, and actually so used or sold.

Unless manufacturers, producers or importers purchasing articles enumerated in Subdivisions 1, 2 and 3, specify on orders therefor that such articles so ordered are to be sold on or in connection with or with the sale of goods which they manufacture, produce or import and are not to be sold unattached to or unincorporated therewith, the tax will apply.

The form suggested to be signed by the manufacturing, producing or importing purchaser is as follows:

"Referring to Federal Excise Tax Law, it is hereby certified that these articles are to be sold on, or in connection with or with the sale of, the goods we manufacture, produce or import, and will not be sold unattached to or unincorporated therewith."

It should be noted that the tax is payable by the manufacturer on articles sold to another manufacturer if the latter uses such articles to equip second hand motor vehicles.

VII. Accessories

"Parts and accessories" as used in Subdivision 3 of Section 900 of the Revenue Act of 1918 mean parts and accessories for any of the articles enumerated in Subdivisions 1, 2 and 3 of the said section.

Such "parts" are any finished article primarily designed for use as an integral or necessary element in any article enumerated in Subdivisions 1, 2 and 3.

Such "accessories" are any finished articles primarily designed for and that may be added to any of the articles enumerated in Subdivisions 1, 2 and 3 of said Section, but are not necessarily essential thereto.

A "finished article" is one which is complete for sale though it may be useful only as part of another article and even though it may undergo some changes in being applied to such other article. In our judgment this means that tire accessories and sundries, tire repair gums and tire repair fabrics are taxable.

A more precise definition of parts and accessories will probably be formulated later by the Department.

VIII. Basis of Tax

The tax on sales at wholesale is based on the actual price for which the article is sold and on sales at retail is based on the price at which the manufacturer customarily sells the same article at wholesale. No cash discounts can be deducted in computing the price for the purpose of the tax.

The law requires that as to wholesale sales, taxes shall be collected on the actual amount of the sale price. Many manufacturers have two or more wholesale prices, as, for instance, manufacturers who sell at one price to jobbers and distributors and at another price to retail dealers. Thus if a manufacturer sells a given tire for $50 to a jobber, the tax would be $2.50, but if the same tire were sold to a dealer for $60 the tax would be $3.00.

Thus this same tire from this same manufacturer would, if sold through the dealer at $60, get to the consumer with a $3 tax, but if sold at $50 through the jobber, would get to the consumer with a $2.50 tax. The many disadvantages to the manufacturer of such a course and the obvious unfairness to the dealer are quite apparent.

Therefore, in order that the tax paid by the consumer on products of rubber manufacturers may be uniform in each case, regardless of whether the goods are distributed by a manufacturer direct to a dealer or through the intermediate channel of a jobber or distributor, it is suggested that all products of rubber manufacturers sold to the wholesale trade be sold on the same price base and that in the case of jobbers or distributors to whom extra discounts are allowed in fact not as discounts on the sale price of the article, but as reimbursement for storage, delivery and other services rendered in behalf of the manufacturer be regarded as a commission or service payment to the jobber and be paid to him by the issuing of a credit memorandum to the jobber or by other suitable method which will make the discount transaction with the jobber or distributor one separate from the sale of the article.

Commissions to agents and other expenses of sale are not deductable from the price. If articles are sold at the factory and the freight charges from the factory to the point of delivery are paid by the buyer as a specific item, or if they are sold delivered at a sum less freight charges to be paid by the purchaser, such charges need not be included as part of the price of the goods; but if the manufacturer sells goods at a delivered price and himself pays the freight, he is not entitled to make any deduction on account of the inclusion in the price of freight charged. If the price of an article is increased to cover the tax, the tax is on such increased price.

IX. Method of Charging Tax

It is recommended that the tax be added by the manufacturer to all sales, specifying the amount of the tax as a separate item on the invoice.

X. Adjustments—Replacements—Exchanges

Where adjustments, exchanges or replacements of tires and tubes are made by the manufacturer thereof with others than the manufacturers, producers or importers of the vehicles enumerated in Section 900, Subdivisions 1 and 2, the tax shall be computed on the price to be paid to the manufacturer, if any, for the tires and tubes delivered by the manufacturer in making the adjustment, exchange or replacement.

It should be observed that the rules above stated apply regardless of whether the goods in question were sold before or after the effective date (February 25, 1919) of the new Revenue Act.

XI. Rebuilt—Salvaged—Repaired Tires, Etc.

Used tires and tubes which have been salvaged and repaired are not subject to the tax.

XII. Seconds

"Seconds" are subject to the tax just as are new tires and tubes. That is, when sold at wholesale by the manufacturer thereof the tax is assessed upon the actual amount received by the manufacturer. When sold at retail the tax is based upon the price at which the manufacturer customarily sells the same at wholesale.

XIII. Sales to Employes

The sale of tires, etc., by the manufacturer thereof to his employes for their personal use are regarded as retail sales and hence are subject to tax based on the price at which the manufacturer customarily sells the same at wholesale.

XIV. Sales to Organization Units

Sales (on books of the manufacturer) to branches, etc., of the rubber manufacturer for use on company owned motor vehicles are not subject to tax.

XV. Exports

Tires, tubes, parts and accessories, where shipped direct into export trade by the rubber manufacturer are not subject to tax, and no record other than the duplicate invoice need be kept by the rubber manufacturer. Trade with the Virgin Islands, the Philippines and Porto Rico is included in export trade.

Whenever goods for export are not so sold by the rubber manufacturer, in addition to the duplicate invoice it will be necessary to keep the following record executed by the party who shipped the goods into export trade:

"The undersigned hereby certifies that the merchandise covered by this invoice was on .....19, exported by the undersigned, as shown by copy of ocean bill of lading attached."

It is suggested that this form be stamped on invoices covering export sales.

XVI. Consignments—B/L Shipments

Goods delivered under consignment, or where shipped bill of lading attached, have not been sold in the sense of the new Act, since title to them has not passed from the manufacturer. The tax on such goods is to be returned in the report for the month in which the title to the goods passed, as by payment of the purchase price or otherwise.

XVII. Goods Owned and in Stock Prior to February 25, 1919

Tires, tubes, parts and accessories owned by the dealer or other purchaser prior to February 25, 1919, are not subject to tax under the new Act.

Tires, tubes, parts and accessories owned by the manufacturer on February 25, 1919, are subject, however, to tax, but the tax is of course not to be paid until the time of the sale of such goods.

XVIII. Price Declines

Where a rubber manufacturer sells tires, tubes, parts or accessories to a purchaser under an agreement to protect the purchaser against a decline in prices on tires held in stock at the time the price decline takes effect, and subsequently the price decline does take effect, and the manufacturer repays to the dealer the differential, then the manufacturer may refund to the purchaser the 3 per cent tax on the differential of the adjusted price and may subsequently take credit therefor on his next monthly return to the Internal Revenue Commissioner.

XIX. Penalty for Misrepresenting Tax

Section 1319 of the Revenue Act provides as follows:

"That whoever in connection with the sale or lease, or offer for sale or lease, of any article, or for the purpose of making such sale or lease, makes any statement, written or oral, (1) intended or calculated to lead any person to believe that any part of the price at which such article is sold or leased, or offered for sale or lease, consists of a tax imposed under the authority of the United States, or (2) ascribing a particular part of such price to a tax imposed under the authority of the United States, knowing that such statement is false or that the tax is not so great as the portion of such price ascribed to such tax, shall be guilty of a misdemeanor and upon conviction thereof shall be punished by a fine of not more than $1,000 or by imprisonment not exceeding one year, or both."

In passing the tax it appears that the manufacturer may only pass the tax the manufacturer is liable for, and the dealer may only pass the tax actually charged to him by the manufacturer. As articles which a dealer owned before February 25, 1919, whether on hand or in transit, are not subject to the tax, no tax may be added to them by the dealer when selling them.

IMPORTANT: All suggestions contained in circular letter of March 5 should be disregarded, this report being intended to take the place of all prior communications.

It must be understood that the excise tax regulations to be issued by the Treasury Department may vary in language or substance from the above, but the Committee feels that the substance will not be materially different, and as soon as such regulations are published they should be obtained by all interested.

Very truly yours,
H. S. Vorhis, Secretary.

News of the Tire Trade

Carlisle Increases Staff—McGraw Moves Offices to Cleveland—Gilbert Oldfield Tire Secretary—Waste Material Dealers Meet and Elect Officers—Other Items of Interest

New Carlisle Men

L. H. Homer, former treasurer of the Smith & Dove Mfg., Company, Andover, Mass., manufacturer of flax products, and previous to that connected with the Stone & Webster Management Association, Boston, Mass., has become treasurer of the Carlisle Cord Tire Company, Andover, Mass.

A. G. Langher, for ten years Chicago district manager for the Diamond Rubber Company, a subsidiary of The B. F. Goodrich Company, Akron, Ohio, has become identified with the Carlisle Cord Tire Company as central district manager, with headquarters in Chicago, Ill. Mr. Langher is well known and liked in middle west tire circles, and should prove a valuable acquisition to the Carlisle.

Kelly-Springfield Plans Progressing

H. B. Blanchard, engineer, is perfecting the plans for the erection at Cumberland, Md., of the large new plant of the Kelly-Springfield Tire Company, New York City, which is to cost between $2,000,000 and $2,500,000. The Kelly-Springfield company already has large plants in Akron, Ohio, and Buffalo, N. Y., but these have been found inadequate for taking care of the immense growth of the company's pneumatic and solid tire business.

McGraw Moves Offices

The executive and general offices of the McGraw Tire & Rubber Company have been transferred from East Palestine, Ohio, to Cleveland, Ohio. The new offices are located at 1900 Euclid Avenue and a sales and service depot will be maintained at 1904 Euclid Avenue to serve local passenger car and motor truck customers.

Gilbert Oldfield Tire Secretary

Rex D. Gilbert, of Philadelphia, Pa., who was identified with the Firestone Tire & Rubber Company, Akron, Ohio, for the past six years, has been made secretary and treasurer of the Oldfield Tire Company, Cleveland, Ohio, recently organized by Barney Oldfield, the veteran automobile racer.

Goodyear to Add to Toronto Plant

The Goodyear Tire & Rubber Company, 152 Simcoe Street, Toronto, Canada, plans to build an $80,000 addition to its plant. C. H. Carlisle is in charge of the work. The Goodyear Tire & Rubber Company, Toronto, is a subsidiary of the large Akron concern of the same name.

Lee to Have More Directors

The annual meeting of the stockholders of the Lee Rubber & Tire Corporation, New York City, and Conshohoken, Pa., is tot be held at 61 Broadway, New York City, the morning of March 27. In addition to voting on the increase of directors from nine to eleven, all business of the past year will be reviewed and discussed. All stockholders of record on the books at the close of business on March 20, 1919, will be entitled to vote.

Duffield Directs Essenkay Sales

J. E. Duffield, formerly of the United States Rubber Company, New York City, and of the Thermoid Rubber Company, Trenton, N. J., has joined the Essenkay Products Company, Chicago, Ill., as general director of sales. The Essenkay company manufactures and sells a tire filler, which takes the place of the inner tube and the air in tire casings.

To Use Pneumatics Exclusively

The Commerce Motor Car Company, Detroit, Mich., has discarded solid tires as part of the equipment of its 2-ton truck and all new machines of this type will have pneumatic tires. The 1-ton and the 1½-ton models will also have pneumatic tires. Solid rubber tires will be fitted only on special request of the purchaser.

Columbus Tire Starts

The Columbus Tire & Rubber Company, Huntington, Ind., has started production, according to a report from that city. The company controls the patent on a non-leakable inner tube, and its factory is under the management of Alfred Cookson, formerly of Akron, Ohio.

Gates to Enlarge Plant

The Gates Rubber Company, Denver, Col., manufacturers of tires, tire accessories, belts and mechanical rubber goods, will build a four-story, 125 x 170-foot new addition to its tire and tube plant. The improvement is expected to cost $200,000.

Hanes Planning Village

The Hanes Rubber Company, Winston-Salem, N. C., is reported to be planning the construction of what is expected to be the most modern and complete manufacturing village in the South. It is said that $300,000 will be spent on the development, which is to be undertaken to secure contentment for the company's employes.

Waste Material Association Meeting

At the annual meeting of the National Association of Waste Material Dealers at the Hotel Astor held on March 18 and 19, it was voted to move the headquarters from Boston to New York as soon as possible, probably about July 1. The proposed change met with little opposition. It was announced that a cotton waste division soon may be added to the association.

Prices of scrap rubber must be reduced so as to offer some favorable selling comparison with the cost of crude rubber. This was the consensus of opinion at the meeting of the scrap rubber division. The scrap dealers declared that rubber manufacturers could hardly become interested in the purchase of reclaimed rubber (made from scrap) unless the price of the latter was based on crude rubber selling at about 35 cents a pound. Crude at this price, it was said, was a possibility of the near future. One scrap rubber dealer and reclaimer declared that the days of one and two dollar crude rubber are of the past, and that even 85 cent rubber was but a dim possibility.

Small dealers and speculators were held to be mainly responsible for the present price of scrap rubber. A plan was proposed for an educational campaign to acquaint these dealers with actual market conditions. It was suggested by one dealer that scrap tires be listed at 3 cents a pound, so that reclaimed rubber could be sold to the manufacturers at from 14 to 16 cents a pound. At this price it was felt reclaimed rubber would hold interest in comparison with crude rubber even at 35 cents. Judging the general tone of the discussions business at present is poor with the scrap rubber dealers.

Officers elected for the ensuing year are as follows: F. W. Reidenbach, president; James Rosenberg, first vice-president; Henry Lissberger, second vice-president; Ivan Reitler, third vice-president; Paul H. Lowenthal, fourth vice-president; Mark B. Speer, fifth vice-president; Harry Klonick, sixth vice-president, and David Feinburg, treasurer. Charles Haskins, executive secretary, holds office for three years and is appointed by the executive committee. The following were elected directors for two years: George B. Smitheman, Julius Rosenberg, Herman Muehlstein and Herman Goldstein.

R. J. Firestone in New Company

(Special Akron Correspondence)

Akron men have acquired control of the Standard Tire & Rubber Manufacturing Co. plant at Willoughby, Ohio, and will engage in the manufacture of cord and pneumatic tires. The output, it is said, will be 250 tires a day.

R. J. Firestone, formerly vice-president of the Firestone Tire & Rubber Company, will be president of the new concern, with C. A. McCulloch of the Parmalee Co., Chicago, as vice-president, and T. A. Palmer, former Diamond Match Co. official, as secretary-treasurer.

The new superintendent is a practical rubber man, holding an important position with an Akron company.

Rubber Men Encourage Aeronautics

(Special Akron Correspondence)

Rubber manufacturers are behind the plan of the aeronautics committee of the Akron chamber of commerce to hold a balloon race here in April. The race will be for Ohioans, the winners to take part in the national race that will be held in September. At least ten entries are expected.

Happenings of Interest to Tire Men

Financial Difficulties of Batavia Solved—New Mason Branch Manager—Kelly Wants to Double Common—Ajax in New Building—Major Rector Home—New Tire Companies

Batavia Out of Receivership

Financial difficulties under which the Batavia Rubber Company, Batavia, N. Y., has suffered for the past year have been satisfactorily disposed of and Judge Mayer of the United States Circuit Court in New York has granted an order terminating the receivership of M. H. Bochow. The company will be restored to the former management headed by Mr. Bochow as president.

The receivership of the rubber company was brought about in an action in the United States Circuit Court to conserve the assets of the company and was necessitated, it is said, by adverse conditions caused by the war.

Creditors of the company received payment of 50 per cent of their claims during the receivership and are now to be paid the remaining 50 per cent, with interest.

The company, operated with success throughout the receivership, is now doing a larger business than ever before in its history. There are three shifts at the plant, which is being run 24 hours a day and employing 250 men, according to a report from Batavia.

Success throughout the receivership, brought about in the face of adverse conditions, reflects great credit upon J. A. E. Whyte, vice-president of the Batavia Rubber Company and manager for Mr. Bochow, the receiver.

Officers of the Batavia Rubber Company, at the time it was taken over by the receiver were M. H. Bochow, president; J. A. E. Whyte, vice-president; T. W. Dinan, treasurer; S. J. Bailey, secretary; R. P. Wilson, assistant treasurer. Directors were George Hodges, W. H. Remick, M. A. Campbell and Judge Washburn. Mr. Dinan and Mr. Bailey have resigned from the directorate. Their places will probably be filled at a meeting of the stockholders to be held at a date not yet announced.

New Ajax Headquarters

The Ajax Rubber Company, New York City, is now installed in its new home at 218-222 West 57th Street, New York City, which was completely remodeled and laid out for its present use.

The Ajax building is four stories high. The ground floor is devoted to retail business and includes a vestibuled entrance to the executive offices and a wide driveway for truck load deliveries. On the second floor are the offices of H. L. McClaren, president; Horace De Lisser, chairman of the board of directors, and Stuart Webster, treasurer of the company. The meeting room of the board of directors, the credit, collection and accounting are also located on this floor. The third floor is occupied by the advertising, export, sundries and traffic departments, the branch house managers, sales correspondents, and general sales officers. Fred E. Dayton, secretary and general sales manager of the company has his offices on this floor.

Major J. M. Rector Returns

The executive committee of the board of directors of the Sterling Tire Corporation, Rutherford, N. J., is now able to resume meetings with every member present, Major J. M. Rector having returned from his campaign in the Forest of Argonne and in the St. Mihiel drive.

Doucette Mason Eastern Manager

In keeping with its policy of seeking the best ability available, the Mason Tire & Rubber Company, Kent, Ohio, has secured the services of William M. Doucette, one of the oldest and most popular men

W. M. Doucette

in the tire trade, as Eastern District manager, with headquarters at 235 West 58th Street, New York City.

Mr. Doucette, who was one of the original sales force of the Goodyear Tire & Rubber Company, Akron, Ohio, with which he was connected for many years, was a pioneer in the sales end of the tire business in the East, having started in the cycle and carriage tire days. Prior to connecting with the Mason he was New York branch manager for both the Hood Tire Company, Watertown, Mass., and the Portage Rubber Company, Barberton, Ohio. He was also traveling factory representative at large for the Portage. With his large following in the trade, and the remarkable line of passenger car and truck tires they manufacture, the Mason Tire & Rubber Company will no doubt do a large volume of business in the Eastern territory.

Associated with Mr. Doucette is J. V. Aguirre, formerly of the export department of the Miller Rubber Company, Akron, Ohio, who handles the Mason export business from the New York branch. Both report excellent business of good volume in both pneumatic and solid tires.

Arch Tire Company

The Arch Company, recently incorporated for $100,000 has established offices in the Akron Savings & Loan Building, Akron, Ohio. J. W. Peble, of Texas, is president of the new organization; J. H. Weaver, of Akron, secretary and general manager, and J. J. Rowe, treasurer. The plan is understood to be to manufacture a new type of tire without inner tube and with a tread seven-eighths of an inch thick. This tire will fit standard runs.

Kelly to Double Common Stock

Stockholders of the Kelly-Springfield Tire Company, New York City, are to be invited to make provision for doubling their holdings of common stock through the medium of a series of stock dividends. That is in effect the proposal which directors of the company have decided to offer at a special meeting called for March 31. Authority is to be asked to proceed to practically double the amount of common stock, increasing it from the present $5,029,900 to $10,000,000. It is intended to distribute the new stock in $25 par shares quarterly, three per cent each quarter, to holders of common shares. This would be in addition to the usual $1 per quarter.

By a cumulative feature of the plan, the three per cent would be based each quarter on the actual holdings of a shareholder during that quarter. Thus, after the first quarter, dividends would be paid on the earlier dividends themselves, as well as on the original holding. By such a provision, the directors have made it possible for a common stock owner to double his holdings in less than six years if a settled policy of declaring a dividend of three per cent in stock each quarter is followed. May 1 is the date set for beginning the new program.

In his letter calling the meeting for March 31, President Van H. Cartmell calls attention both to the large amount of surplus properly available for dividends and to the wisdom of holding that surplus for expansion.

"By reason of the large surplus which your company has accumulated and the encouraging outlook for a continuance of an increase of its business and earnings, the board of directors deems it advisable that a larger dividend distribution be made to the common stockholders. Plans which your company adopted for a material expansion of its business, necessarily curtailed owing to the war, will now be actively prosecuted in order to provide the necessary manufacturing facilities required for the constantly increasing demand for its products.

"Notwithstanding the strong financial position of your company, as shown by the annual report, a copy of which has already been mailed to you, your board of directors does not, in view of its plans for the expansion of the business, recommend an increase at this time in the amount of the cash dividend on the common stock, believing it to be for the best interest of the company to conserve its cash resources for the present and future requirements of its business.

"At the same time, in order that the common stockholders may, nevertheless, participate in the large surplus which has been accumulated and the increasing earnings of the company, applicable to the payment of dividends on the common stock, your board proposes to authorize the payment (if the increase of common stock is authorized), beginning May 1, 1919, of a quarterly dividend of 3 per cent on the common stock, payable in the common stock of the company at par ($25 per share), in addition to the regular quarterly cash dividend of $1 per share."

Fidelity Leases Plant

The Fidelity Tire & Rubber Company has leased the plant of the Kendall Tire & Rubber Company, in Massillon, Ohio, and will manufacture Ford-size tires and tubes. The officers of the Fidelity company are: G. H. Dirrenberger, president and general manager; G. C. McConnell, vice-president and superintendent; E. G. Stearns, treasurer, and David C. Stearns, secretary.

Miscellaneous Trade Notes

Fisk Promotes Oakes and Newton—Dunlop to Have Cotton Mill—Overman Enlarging Plant—Larger Quarters for Lambert Trublpruf—Retail Trade Notes and Other Items

Fisk Changes

The remarkable growth of the business of the Fisk Rubber Company, Chicopee Falls, Mass., in the East has made necessary the division of its New England and New York territories into two separate sales districts. These will be known as the New England District with Walter Oakes as district manager, and the Western New York District with George T. Newton holding the district managership.

WALTER OAKES

GEORGE T. NEWTON

In his elevation to the New England district managership, Walter Oakes receives a promotion which comes to him following twelve deserving years of service with the Fisk Rubber Company. His first connection with the Fisk Company started as store salesman at Boston, Mass., in 1907. Later he was made store manager at Boston and then advanced to branch manager, which latter office he will combine with his increased duties as district chief. Mr. Oakes' long association with the tire trade of Boston has won for him a wide acquaintance whose best wishes go with him in his greater opportunity.

George T. Newton, who for the past three years has been in charge of Fisk sales in the two territories, will hereafter concentrate his efforts in the important Western New York District, having supervision over eight direct factory branches including Buffalo, Syracuse, Rochester, Utica, Binghamton, Elmira, Albany, and Erie, Pa. His headquarters will be at the Rochester branch. Mr. Newton has been with the Fisk Company for four years, first as a special representative of the sales department, and the last three years as district manager.

New Plant for Dunlop

The Dunlop Rubber Company, Limited, Birmingham, England, is erecting at Castleton Gales, near Rochdale, England, at a cost of £1,500,000 (about $7,500,000), the largest mills in the world for making tire fabrics exclusively, according to *The Commercial Motor*, London.

All the spinning and weaving will be carried out by electrically-driven machinery estimated to consume 18,000,000 lbs. of cotton yearly. Over 3,000 employes will be engaged and the capital for the venture has been subscribed privately. The shareholders of the old concern, known as the D. R. Cotton Mills, have been bought out for £683,000 (about $3,415,000).

Swinehart Declares Dividend

(Special Akron Correspondence)

Swinehart Tire & Rubber Company, Akron, Ohio, directors recently declared a two per cent quarterly dividend to be paid for the first quarter of the year on April 15. This is an increase over the old rate of 1½ per cent a quarter. Sales in 1918 totalled $3,900,000, an increase of 100 per cent over the previous year. Net profits amounted to over $500,000 after all deductions were made. Carl R. Lee of Cleveland was added to the board of directors.

Lambert Trublpruf Removes

Due to the increased business necessitating more spacious quarters, the Lambert Trublpruf Tire Co. has removed its headquarters to 1172 Bedford Avenue, Brooklyn, N. Y.

The Lambert Trublpruf Co.'s new store is located in the center of the automobile section of Brooklyn and is equipped in the most modern way. The company manufactures and sells "Lambert Trublpruf" tires, "Lambert Leatherless" harness, and "Lambert Stretchless" belting.

Overman Building Additions

The Overman Cushion Tire Company, 250 West 54th Street, New York City, is erecting a one-story 60 x 180-foot factory building and a 50 x 53-foot powerhouse as additions to its plant in Belleville, N. J.

Empire Pays Dividend

The Empire Tire & Rubber Company, Trenton, N. J., has declared a quarterly dividend of 1¾ per cent on preferred stock payable to record of January 1st.

In the Retail Trade

The United Tire Company, Brockton, Mass., which handles Goodrich, Miller, Fisk and Ajax tires, has added the Hartford to these lines.

The Worcester Tire & Rubber Company, Worcester, Mass., of which L. M. Cahn is owner and manager, has opened a new branch store to take care of its rapidly growing business. The new store, which is located at 681 Main Street, Worcester, is up-to-date and well equipped. The company has the exclusive agency in Worcester county for Keystone and National Speedway tires.

Increasing business has brought about the necessity for extensive improvements to the McIntire Auto Garage, Butler, Pa. A tire vulcanizing and repair shop is being installed and will be in charge of George W. Robb. This company handles, among other lines, Firestone truck tires.

The Brown-Heehn Automobile & Vulcanizing Company, Vandergrift, Pa., has opened for business in the Central Garage, 144 Washington Avenue, that city.

N. W. Fulker, Aberdeen, S. D., has secured the local agency for Dayton Airless tires. He will also carry a line of automobile accessories.

Robert Harris has rented the store of Henry Unlmansiek in Rising Sun, Indiana, and will install machinery to repair and re-tread tires. The shop will be in operation shortly.

A Goodyear truck tire agency and service station will soon be opened in a new building at 1518 McGee Street, Kansas City, Mo., by R. E. Robinson and J. B. Osgood, who have leased the premises for five years.

The LaFayette Tire & Vulcanizing Company, for several years located at 608 LaFayette Avenue, St. Louis, Mo., has opened in a new store at 1811 South Broadway, same city, where it will retail tires and automobile accessories. This concern has also installed a special department for "Dri-Kure" tire retreading and tire and tube repairing.

The Kelly-Springfield Tire Company has leased for five years a building now in process of construction on the corner of West 18th Street and Grand Avenue, Des Moines, Iowa, in which a local branch will be installed.

Fred Vickery has been appointed sales manager of the Harrisburg Auto Tire & Repair Company, Harrisburg, Pa.

A new automobile and cycle supply store has been opened at 284 Main Street, Danbury, Conn., by Samuel Schwartz, local agent for Kelly-Springfield, Goodyear and United States tires.

The Patterson Tire & Rubber Company, has opened a new store at 569 Main Avenue, Passaic, N. J., under the management of J. E. Golden, who announces that his company will have the sole local agency for Keystone and National Speedway tires.

The Guarantee Tire & Supply Company, 1440 Van Ness Avenue, San Francisco, Cal., has opened a branch at 2458 Broadway, Oakland, Cal., under the name of Granfield & Bascom Tire & Supply Company.

The M. K. Martin Company, Tacoma, Wash., has opened an accessory department in connection with its tire vulcanizing and retreading plant.

A vulcanizing shop and tire store has been opened at 1205 Market Street, San Francisco, Cal., by H. W. Van Bilderbeek.

A tire repair business under the name of Guarantee Vulcanizing Works has been established at 4 East Washington Street, Stockton, Cal.

News Items of the Tire Trade

Cassel Leaves Firestone—Globe Reports Record Results—Dates for Auto Shows—British Firms Stop Tire Guarantees—Pennsylvania Stockholders Meet—News of Wholesale Trade

British Abandon Tire Guarantees

An announcement has appeared in British automobile publications to the effect that the following tire manufacturers in Great Britain have agreed to abandon the guarantees given on the purchase of solid rubber tires, the reason given being that the tires branded with their names are guaranteed value for money: Associated Rubber Manufacturers, Limited; Avon India-Rubber Company, Limited; W. & A. Bates, Limited; Dunlop Rubber Company, Limited; Grimston Tyres, Limited; W. T. Henley's Telegraph Works, Limited; Leyland Rubber Company, Limited; Midland Rubber Company, Limited; North British Rubber Company, Limited; Redfern's Rubber Works, Limited, St. Helens Cable & Rubber Company, Limited; Geo. Spencer-Moulton & Company, Limited; Wallington-Weston Company, Limited, and Wood-Milne, Limited. The tire guarantees of these concerns, according to *The Commercial Motor*, London, ceased on March 1.

The manufacturers will meet their customers in relation to any tire which during the course of running exhibits any sign of defect in manufacture.

In contrast with this combined action, it is interesting to note that Chas. Macintosh & Company, Limited, and the Challiner Tyre Company, Limited, both of Manchester, England, have increased the mileage guarantee of their solid tires from 10,000 to 12,000 from January 1, of this year. Previously, all British solid rubber tires have been sold on a mileage basis.

Globe Shows Fine Results

After doubling its sales last year as compared with those of 1917, the Globe Rubber Tire Manufacturing Company, Trenton, N. J., and New York City, has accomplished the feat so far this year of doing 180 per cent of the 1918 business for the same term. This was the gratifying news recently disclosed to Globe stockholders. At the same meeting H. L. Hornberger, general sales manager, and H. W. Kugler, factory manager, were elected to vice-presidencies. The Globe directorate was itself further strengthened by the accession of W. G. Besler, president of the Central Railroad of New Jersey. J. B. Linerd, to whose intimate knowledge of the tire industry and its ways much of the company's progress is attributed, was re-elected president.

Dates Set for Auto Shows

At the first meeting of an International Automobile Manufacturers' Congress, held in Lyon, France, during the progress of the Lyon Sample Fair, a circuit of automotive exhibits was arranged and dates set for the forthcoming French and English shows. The Congress, which included a branch representing America, according to a report from Paris, has set the following dates for automotive shows:

Paris, France (Grand Palais)	October 15
London, England (Olympia)	November
Brussels, Belgium	December
New York City	January
Chicago	February

Chillicothe Tire & Rubber

The Chillicothe Tire & Rubber Company, Chillicothe, Ohio, which was recently formed, plans to equip a plant for the manufacture of automobile tires.

Cassel Enters Truck Field

H. Cassel, formerly manager of the Scranton, Pa., branch of the Firestone Tire & Rubber Company, Akron, Ohio, has decided to leave the tire and rubber business and has become truck sales manager of the Whiting Motor Company, New York

H. CASSEL

City, metropolitan district distributors for the International Harvester Company.

Mr. Cassel's rapid advance during the five years he was with the Firestone should speak well for his future in the motor truck business, but Scranton dealers, and the Scranton Motor Trades Association, of which organization Mr. Cassel was vice-president for three years, will much miss his cooperation and good fellowship.

Pennsylvania Rubber Meeting

At the annual meeting of the stockholders of the Pennsylvania Rubber Company, Jeannette, Pa., a quarterly dividend was declared of 1¾ per cent on preferred and 1½ per cent on common stock.

Directors were elected as follows: Herbert DuPuy, H. Wilfred DuPuy, Charles M. DuPuy, Seneca G. Lewis, George W. Shiveley.

The officers elected were: Herbert DuPuy, chairman; H. Wilfred DuPuy, president-treasurer; Charles DuPuy, vice-president; Seneca G. Lewis, vice-president-general manager; G. W. Daum, second vice-president in charge of production; A. H. Price, second vice-president in charge of sales development; George W. Shiveley, secretary; C. G. Morrill, assistant treasurer; H. H. Salmon, purchasing agent; James Q. Goudie, general sales director.

The executive committee consists of H. Wilfred DuPuy, Charles M. DuPuy, Seneca G. Lewis, George W. Shiveley, George W. Daum, C. G. Morrill, H. H. Salmon, A. H. Price.

Wm. Jameson B. of T. President

William Jameson, superintendent of the Fisk Rubber Company, Chicopee Falls, Mass., has been elected president of the local Board of Trade.

In the Wholesale Tire Trade

Offices are being fitted up at 919 Locust Street, Des Moines, Iowa, by the Iowa Racine Rubber Company, which has taken over the sales of Racine tires in Iowa and in 15 Missouri counties. Charles H. Kenyon is president of the concern.

Three buildings have been leased at the north-west corner of Lindell and Grand Avenues, St. Louis, Mo., by a new tire service firm called the County Sales Corporation, and will be remodeled for use as a tire and automobile accessories store. The company handles the Knight tire for St. Louis and county exclusively. It also has the agencies for Missouri and southern Illinois for the Blackstone, Canton Cord, and Lincoln Highway tires. The officers of the company are: Charles G. Mulligan, president; F. Reid Harris, sales manager, and James J. Rohan, secretary and treasurer.

Larger quarters have been taken between Seventh and Eighth Streets, Dubuque, Iowa, by the Midwest Auto Supply Company, which was formerly the Sterns Tire & Tube Company, and handles an extensive line of automobile tires and inner tubes.

The Magic Auto Supply Company, Hartford, Conn., has opened a store at 251 Asylum Street, that city, where it will deal in tires, inner tubes, and automobile accessories. The members of the firm are Abraham M. Schuman, Harry Kone and Alfred M. Fichman.

The Hewitt Rubber Company of Massachusetts has been formed in Boston, Mass., by W. S. Carleton, F. M. Broadhead and T. H. Morgan, to handle for New England the business of the Hewitt Rubber Company, Buffalo, N. Y. Headquarters have been installed at 48 Gloucester Street, Boston. Mr. Carleton, who was formerly with the Republic Rubber Corporation, Youngstown, Ohio, and for the past nine months in the service of the United States Shipping Board, is manager of the new concern.

F. K. Starbird has been made district manager by the Firestone Tire & Rubber Company, Akron, Ohio, for a territory covering Great Falls, Minot, Fargo, Des Moines and Minneapolis. He will have his headquarters in the latter city. Previous to his connection with the Firestone, Mr. Starbird was in the pneumatic tire sales department of the Goodyear Tire & Rubber Company at its factory in Akron, Ohio.

New Tire and Rubber Company

The Rainbow Tire & Rubber Company, to be located in Delaware, Ohio, and controlled by people of that city, has elected the following first officers: Chas. E. Ross, president; H. L. Gilbert, vice-president; George E. Taylor, secretary and attorney; W. V. Aldrich, treasurer. Board of directors: C. E. Ross, H. E. Fegley, Geo. E. Taylor, C. A. Morrison, W. V. Aldrich, H. L. Gilbert and Arlton Waggoner.

The Rainbow Tire & Rubber Company is incorporated under the laws of the State of Ohio with $250,000 capitalization, and has engaged the services of T. C. Hazard, Rochester, N. Y., to take charge of technical problems in cooperation with Mr. Ross.

To Build New Tire Factory

The Union Tire & Rubber Company, Cleveland, Ohio, is to erect a plant for the manufacture of tires and tubes. The Osborn Engineering Company, Cleveland, Ohio, have been awarded the contract for the work.

American Rubber Patents

ISSUED JANUARY 14, 1919.

1,290,873—To Frederick W. Baker and James S. Foley, Stourbridge, England. Detachable rim.

1,290,884—To Philip H. Black, Cincinnati, Ohio. Receptacle for puncture closing compound.

1,290,889—To Hans Bretscher, New York, assignor of one-half to Felix Spitzner. Demountable rim.

1,290,894—To Daniel R. Bryan, Chatham, N. J. Pulley and belting.

1,290,955—To Stuart M. Ford, Bridgeport, Conn., assignor to The Duratex Co., Newark, N. J. Fabric-hanging machine.

1,290,974—To Benjamine F. Gragg, Louisville, Ky., assignor of one-half to Julian R. Fisher, Louisville, Ky. Hose coupling.

1,291,020—To Ernest Kessler, Basel, Switzerland. Hose coupling.

1,291,116—To William A. Pinckney and Samuel D. Hurd, Stanton, Mich. Antiskid device.

1,291,156—William J. Robinson, Denver, Col. Tire.

1,291,187—To Maximillian Charles Schweinert, West Hoboken, N. J. Tire-pressure gage.

1,291,265—To Edward Toole, Gloucester, N. J., assignors of one-half to Edward H. McLennon, Gloucester, N. J. Rim-collapsing device.

1,291,269—To Antonio Troiano, Washington, D. C. Rubber heel for shoes.

1,291,293—To Robert J. Vincent and William L. McCowan, Hudson Falls, N. Y., assignor to V. & M. Co., Inc., New York. Non-skid element connector.

1,291,345—To John B. Zimdars, San Francisco, Cal. Internal tire armor.

1,291,346—To John B. Zimdars, San Francisco, Cal. Inner tube for pneumatic tires.

1,291,380—To David Blumberg, Bridgeport, Conn. Auto traction device.

1,291,409—To Lewis W. Chubb, Edgewood Park, and Robson De S. Brown, Wilkinsburg, Pa., assignors to Westinghouse Electric & Mfg. Co., Penn. Method of determining melting points.

1,291,434—To Joseph Wilson Dean, Jr., Pond, Mo., assignor of one-half to J. Wilson Dean, Sr., Pond, Centaur, Mo. Vulcanizer.

1,291,471—To Frank M. Funk, Detroit, Mich. Hose clamp.

1,291,477—To Arthur A. Girard, New Haven, Conn. Spring tire.

1,291,627—To Angelo Paroli, Chicago, Ill., assignor of one-half to Oreste Tardella, Chicago, Ill. Resilient wheel.

1,291,647—To Ludwig Langham, Seattle, Wash. Low-pressure alarm for pneumatic tires.

1,291,657—To Francis A. Nolan, St. Paul, Minn. Fastener.

1,291,676—To John R. Ganimeter, Akron, Ohio, assignor to the B. F. Goodrich Co., New York. Pneumatic tire structure.

ISSUED JANUARY 21, 1919.

1,291,727—To Bronson Bayliss, St. Louis, Mo. Wheel.

1,291,739—To Alba C. Booth, Burlington, Vt. Name-plate for rubber.

1,291,744—To Cram A. Bayer, Milwaukee, Wis. Resilient wheel.

1,291,809—To Evert Cornelis Ekker, The Hague, Netherlands. Military dress.

1,291,835—To Jacob Goldstein, West Hazleton, Pa. Fountain pen blotter.

1,291,853—To George W. Gulledye, Briartown, Okla. Tire protector.

1,291,896—To Joseph J. Hurley and Charles C. Hurley, St. Joseph, Mo. Run for automobile tires.

1,291,930—To Maurice B. Karman, Washington, D. C. Rim for pneumatic tires.

1,291,948—To John T. Lister, near Wellington, Ohio. Inner tubular support for pneumatic tires.

1,291,951—To William Langeway, Gary, Ind. Tire armor.

1,291,962—To Jarord W. Lytton, Franklin, Va., assignor to Lytton Mfg. Corp., Franklin, Va. Steam trap.

1,291,991—To Hyokichi, Morni, N. Y. Aerial toy.

1,292,027—To Clifford H. Oakley, Trenton, N. J. Process for making rubber. Impregnated fabric for brake linings.

1,292,052—To William F. Ray, Chicago, Ill. Apparatus for manufacturing tires or interliners.

1,292,054—To John Florence Reilly, New York. Tire carrier.

1,292,088—To Fred Schilke, Oatman, Ariz. Auto tire cover.

1,292,111—To Selden L. Simpson, Detroit, Mich., assignors of one-half William E. Currie, Detroit, Mich. Vehicle wheel.

1,292,120—To Edwin D. Stalford, Baltimore, Md. Concave rolled suction cup heel.

1,292,133—To Elmer B. Staughton, Rogers, Ark. Dam holder.

1,292,139—To Demountable Rim for Auto-wheels.

1,292,161—To Jose R. Valders, Key West, Fla. Resilient tire.

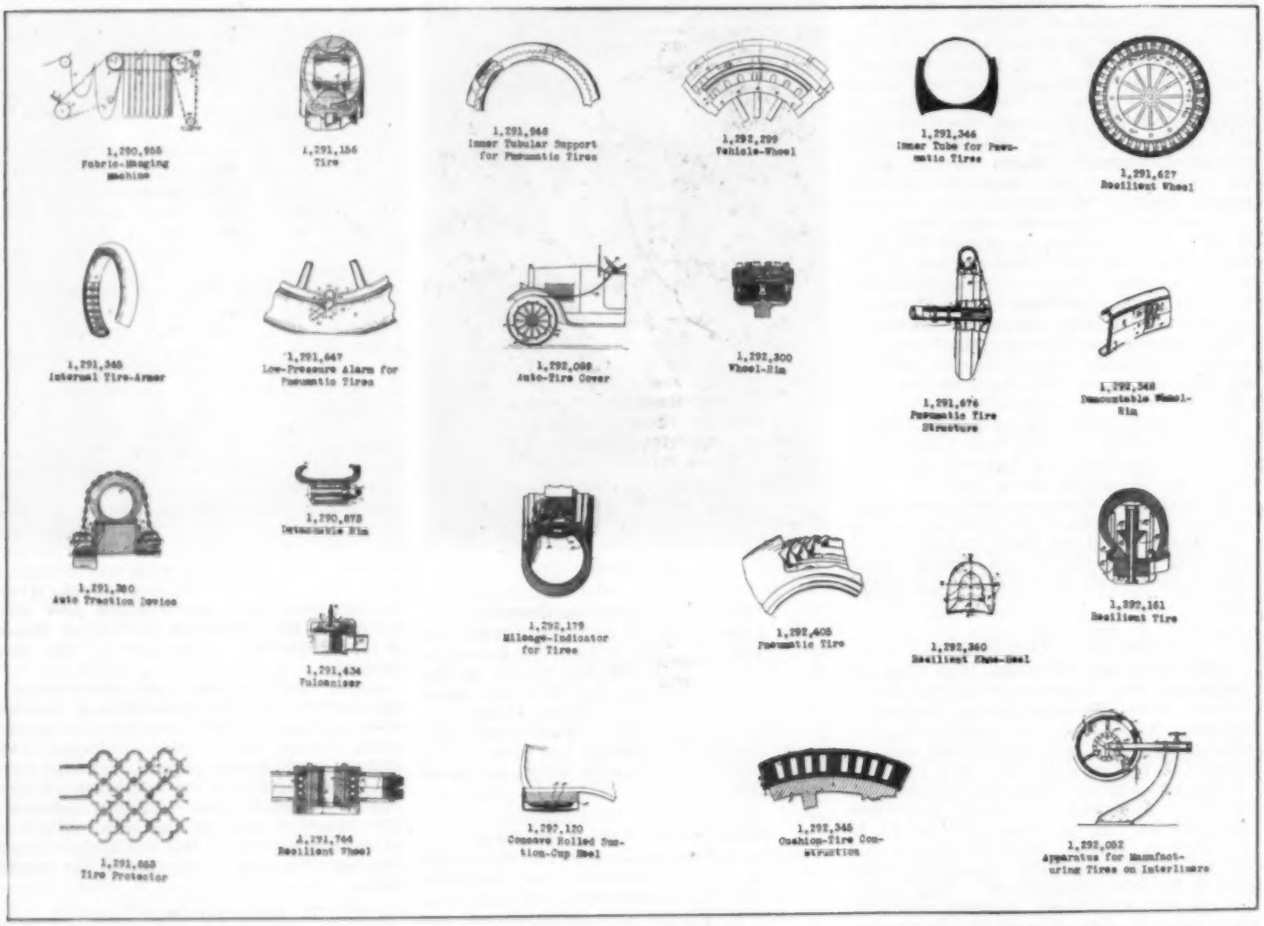
1,292,176—To James E. Warder, Chicago, Ill. Tire shoe.

1,292,179—To John Warren Watson and Richard Adlai Watson, Wayne, Pa. Mileage indicator for tires.

1,292,299—Franklin A. Fromman, Chicago, Ill. Vehicle wheel.

1,292,300—To Franklin A. Fromman, Chicago, Ill. Wheel rim.

1,292,305—To Ralph W. Gilpatric, Pasadena, Cal. Wheel.



Kelly Directors Reelected

The annual meeting of the stockholders of the Kelly-Springfield Tire Company, New York City, held in Jersey City, N. J., on March 11, resulted in the re-election of all the retiring directors of the company.

The board of directors consists of Van H. Cartmell, president; Stephen Peabody, vice-president; F. A. Seaman, secretary; O. R. Cook, sales manager; A. L. Scheuer, J. Oppenheim, A. M. Poole, and B. Maas.

W. H. Lacey Branch Manager

W. H. Lacey has been appointed manager of the Hartford, Conn., branch of the Kelly-Springfield Tire Company, New York City, which has opened a store in the Judd & Root Building in Hartford.

MARKETS

Manufactured Rubber Goods

NEW YORK, March 21, 1919.

Retail business in general is good and stocks are being turned over rapidly, but buying is limited to replacements and it is probable that traders will continue to adhere to the hand-to-mouth policy until prices are revised downward. In the meantime, the wholesale end of business is very quiet and prices show little or no change. Manufacturers of most lines attribute the situation to the high cost of labor and materials, and they say that business will not only remain stationary, but that it will decline until prices go lower. The feeling that producers of raw and semi-raw materials should cut their prices to stimulate business is growing daily.

Collections are remarkably good, a fact that is inspiring confidence among jobbers, whose stocks are moving out at a satisfactory rate.

MECHANICALS

The wholesale end of the mechanical rubber goods trade reports a slight improvement in the volume of business, which it considers as an indication that conditions may be expected to grow better. The retail end of the trade is full of optimism and good business is expected when spring buying begins. With the declining market there is a general disposition all along the line to keep stocks down, but at the same time to have a complete assortment of goods. Jobbers are still reducing their stocks and in order to do this are offering special inducements in the case of items in which they are overstocked. Retailers continue the policy of buying from hand to mouth and no longer find it necessary to place orders far ahead, as prompt shipment can now be secured on practically all lines.

TIRES

The retail demand for tires continues to be very good, and in some sections of the country it is reported even to be showing increased activity.

As was stated in our last report, there was a large volume of purchasing by dealers when the new War Revenue Tax was announced, for the reason that it was at first believed that goods bought before February 25 would not be taxed. However, it has been ruled that to be actually tax free the goods had to have been delivered not later than February 24 and many manufacturers who acted under the impression first mentioned, and billed goods ordered prior to February 25 without including the tax in thir invoices, have thousands of dollars of tires on which they will have to stand the tax unless they can make arrangements to pass it on to the dealers. Many sold goods under these conditions on the strength of the argument that these goods would be tax free and they will have to stand a loss of 5 per cent on their invoices in cases where the goods were shipped after midnight, February 24.

The new tax now appears to have brought purchasing by retailers to an almost full stop and manufacturers are busy explaining the situation to the dealers who use it as a new excuse for holding on to the hand-to-mouth buying policy. This is particularly true in the East where dealers' stocks are fairly large. No early reduction of prices is looked for.

DRUGGISTS' SUNDRIES

Retailers of rubber sundries are buying only in quantities sufficient to cover present requirements, a policy that is followed because of the feeling generally prevalent in the trade that prices of all goods will soon come down, though an entirely different view is held by the manufacturers. Collections are very satisfactory and retail sales show good volume.

Cotton Yarn and Fabrics

NEW YORK, March 21, 1919.

Although there has been considerable confusion in the local cotton trade during the past two weeks, due to the readjustment of commitments in the old-style cotton contracts, there has been an exceedingly firm undertone current in the market since our last report. Heavy speculative buying in the new style contracts has been reported from day to day, most of this buying being the result of European reports indicating the conclusion of an early peace. Wall Street and Western interests are credited with the bulk of this speculative buying.

Southern speculators are also showing more interest in the market, and have been doing some speculative buying on their own account. The increase in buying interest has stimulated prices and induced the trade to take a more optimistic view of conditions. Heavy buying for both foreign and domestic account is looked for when the various factors prolonging the final signing of peace articles have been definitely removed. During the past week, March old contracts scored a sensational advance of fully $10 per bale.

Inasmuch as a good deal of recent buying has been purely from speculative sources, a small sized boom in buying demand is looked for shortly. While trade interests have not been buying heavily of late, it is known that spinners will have to fill heavy requirements as they get their businesses back to sound levels, and iron out the labor difficulties which have been hampering operations for so long a time. The amount of cotton from the last crop brought into sight thus far this season totals only approximately 9,000,000 bales, as compared with 10,125,000 at the same time last year, and 10,840,000 bales two years ago. Exports from August 1 up to March 17 totaled approximately 3,300,000 bales, against 3,040,000 at the same date in 1918.

SEA ISLAND COTTON

Southern advices indicate that the current crop of Sea Island cotton is coming into sight slowly, with growers holding on to their crop for their own prices, contending that the rates offered them fall below even the producing costs. There are the usual distress sales reported, but these are few. The market continues in a nominal condition, with the asking price ranging from 65 to 75 cents, and even higher, these prices being first cost at interior points.

EGYPTIAN COTTON

Some sales of very small quantities of Egyptian cotton have been reported, but the domestic market on the whole is pretty barren of stocks. A steamship bringing between 5,000 and 8,000 bales of the Egyptian staple is still due, but no definite date of the expected arrival is yet announced, although it is believed the steamer will make port at Boston.

California growers of Egyptian cotton will sell their crops on grade hereafter, according to the following wire received from Bakersfield, Cal.: "At a meeting of the cotton growers held in the Bakersfield Farm Bureau office arrangements were made for the pooling of last year's crop of Egyptian cotton. Prof. W. E. Packard, W. D. Camp, and Myron A. Rice, farm advisers, met with the growers. The plan adopted was to have all the lint graded by a Government expert and then sell on grade, shipping directly to Boston through the California Farm Bureau Marketing Association. It will be consigned to the People's National Bank of Boston, which will advance as much as 60 per cent of the market value of the cotton, including the freight."

FABRICS

A better feeling is reported from the various fabric markets and business is picking up although prices still remain unsettled. Buyers are shopping around the markets and placing their orders with more confidence; many believe that bottom levels have been reached in many fabrics.

TIRE FABRICS

Business in this line still continues rather quiet, although sellers report that the number of inquiries for the fabrics is showing some improvement. Prices continue generally unchanged, although some transactions at other than the quoted prices may be made, particularly in Egyptian stock. Egyptian carded fabric is wholly nominal, and demand is very dull. Sea Island combed is held at $1.35 to $1.55 for the 17¼ ounce fabric.

HOSE AND BELTING FABRICS

Demand for hose and belting fabrics is reported as quiet, manufacturers having covered their current consuming requirements some time ago when war-time conditions made it imperative that they stock

up ahead or run the risk of being left without materials. The army and navy still require considerable quantities of ducks and canvas, and the market is a little unsettled. Consumers are generally holding off until demand for their products increases enough to warrant additional buying of raw materials.

DRILLS, SHEETINGS AND OSNABURGS

There is a better tone to the market, and business is picking up in a very satisfactory manner, according to the trade. Several fair-sized sales of sheetings have been made since our last report, the largest calling for 100,000 pieces. The feeling at the mills is also more buoyant, and although manufacturers believe that prices are unnaturally low at the present time, they are waiting for the law of supply and demand to once more put the market on a firm basis. At the present writing, they are glad of any business at all, and the market is still a buyers' market, with consumers able to obtain price concessions in nearly all lines. Cotton yarn dealers are firmer in their views and are holding their goods for full prices now, whereas a few weeks ago a prospective buyer would have had little difficulty in getting prices shaded if he meant business.

BURLAPS

Importers express unqualified disgust with the present state of affairs in the market for burlaps, all precedents and rules being broken by its present condition. Burlaps here are selling at the prices prevailing in the Calcutta market, and, in many instances, below these prices, and even under these conditions, holders are unable to dispose of much of their stocks. Consumers are buying only in small amounts, consumption being very much below normal. Importers are not sending any more orders to the Indian market, reasoning that they are sure to lose money at present prices. With goods selling here at the same prices as in primary markets, the importers would be out the freight and insurance costs on any additional stocks they would bring in.

TIRE FABRICS

17¼-ounce Sea Island, combed, sq. yd.	1.35@1.55
17¼-ounce Egyptian, combed	1.20@1.30
17½-ounce Egyptian, carded	Nominal
17¼-ounce Peelers, carded	.85@ .90
17¼-ounce Peelers, combed	1.05@1.15

DUCKS

Single Filling (pound basis) lb.	Nominal
Double Filling (pound basis)	Nominal

DRILLS

37-inch	2.35-yard yd.	.17½@
37-inch	2.75-yard	.15¾@
37-inch	3.00-yard	.15 @ .15¼
37-inch	3.25-yard	.14½@
37-inch	3.50-yard	.13 @
37-inch	3.95-yard	.12 @
37-inch	2.00-yard Southern	@
37-inch	2.00-yard Northern	@
40-inch	2.40-yard Southern	@
40-inch	2.40-yard Northern	@
52-inch	1.90-yard Southern	@
52-inch	1.90-yard Northern	@

SHEETINGS

40-inch	2.35-yard yd.	.17 @
40-inch	2.50-yard	.17 @ .17½
40-inch	2.85-yard	.15 @
40-inch	3.00-yard	.14½@
40-inch	3.25-yard	.14 @
40-inch	3.75-yard	.12½@
40-inch	3.60-yard	.14 @
40-inch	4.25-yard	.11 @

Note.—In view of the unsettled conditions prevailing in the market at the present time, the prices quoted above are more or less nominal, and are not guaranteed.

BURLAPS
(Carload lots)

		Per Yard.
7 -ounce	40-inch	6.15@ 6.25
7½-ounce	40-inch	6.25@ 6.50
7½-ounce	45-inch	Nominal
8 -ounce	36-inch	Nominal
8 -ounce	40-inch	6.50@ 6.75
8 -ounce	45-inch*	8.00@
10 -ounce	36-inch	Nominal
10 -ounce	40-inch	8.50@ 8.75
10 -ounce	45-inch	Nominal
10½-ounce	40-inch	8.75@ 9.00

* Nominal.

Chemicals and Compounding Materials

NEW YORK, March 21, 1919.

There is a feeling of optimism throughout the trade, and many dealers believe that a small boom is in prospect with the near approach of milder weather. The rubber industry, and others outside the regular paint trade, are coming in for a greater share of attention from producers, who now realize more fully their importance as factors in the market.

The market has been rather quiet in so far as actual trading is concerned during the past fortnight, but the number of inquiries is steadily picking up. Buyers, as a rule, are taking only enough stock to cover their immediate current consuming requirements in view of the commonly accepted view that lower prices are soon to prevail.

There have been few radical price changes reported during this period, although prices have generally moved up or down a trifle in compliance with the law of supply and demand. There has been a little weakness, however, notably in dry colors where rumors of price shading have been persistently circulated. New prices for zinc oxide are being awaited with interest. Reduction in the price of lithopone has greatly stimulated trading in this material.

SOLVENT NAPHTHA

Demand for solvent naphtha continues quiet, and the market is nominally unchanged at 22 to 23 cents per pound. This price, however, is subject to concessions due to the weak undercurrent in the market, and buyers can obtain marked concessions in placing orders at the present time. The export movement has slackened off, due to the difficulty encountered in booking space on the steamships.

BENZOL

The market for benzol is showing a weak tone in the present market, this commodity being the weakest in the entire list of coal-tar products. Prices are unchanged on the basis of 22 to 27 cents per gallon, but price reductions on this article are also possible to a buyer wishing to buy on the spot in any quantity. Export business is slow, no sales of any account having been reported lately to this branch of the trade.

WHITING

Prices on whiting continued unchanged, and demand, from both domestic and export sources, is at a low ebb. Although stocks are not very large, producers report that they have more than enough to keep them going for some time yet, unless the demand should show a sudden revival.

CHINA CLAY

Demand for China clay has shown no improvement, and the market is still displaying a weak undertone. There is a little demand from the paint trade reported by producers, but this trade is much below the normal volume. Domestic is held at 15 to 20 cents per pound, while the imported is held at 18 to 25 cents.

LAMP AND CARBON BLACK

Prices on blacks continued unchanged, and the market presents a dull appearance. Neither domestic nor foreign buyers are taking blacks in any quantity, and shading of prices has been reported in several instances. Lampblack is held at 14 to 45 cents per pound, drop at 5½ to 15 cents, and carbon gas at 14 to 25 cents.

ZINC OXIDE

Prices for the next quarter have not yet been announced by leading producers, and consumers are refraining from filling any but their current consuming requirements until prices for the second quarter have been made public. Latest advices from St. Louis read as follows: "Zinc oxide market here is slow only so far as the paint trade is concerned; demand from other sources good. European buyers are reported to be planning to book a heavy volume of zinc oxide tonnage during the next three months."

LITHARGE

Trading in this commodity continues quiet, and prices remain unchanged. No improvement in the demand can be looked for until prices are revised downward, in the opinion of the trade.

ORANGE MINERAL

In the absence of any fresh arrivals of foreign supplies of orange mineral, the market is showing a quiet tone and the price of the imported stock remains nominally unchanged. Domestic prices are also unchanged.

LITHOPONE

Demand for lithopone continues steady, and although this demand falls considerably below the normal volume of trading, stocks are also light, and producers are well satisfied with the amount of business being booked. Most of the producers have contracted ahead for the next few weeks. As the number of inquiries from consumers is constantly increasing, it is believed that the market will be maintained on its present basis.

OILS

Trading has been quiet during the past two weeks in this branch of the market. Linseed oil in barrels is quoted higher at $1.45 to $1.50 per gallon. Refined corn oil is also higher at $1.53 per gallon, while the price for the crude remains unchanged at 13 and 13½ cents per pound.

SHELLAC

Demand for shellac is reported to be showing a better tone at the present time, although the market is not showing any particular strength. Bleached bonedry is quoted lower at 57 to 58 cents per pound, and T. N. is also weaker at 46 to 47 cents per pound. Arrivals are large. Calcutta reports that the primary markets there are in a sound condition, with firm prices prevailing.

Prices Current for Chemicals, Fillers, Colors, etc.

Acetone	lb.	.15½@	.16
Accelerator, in drums	lb.	.85 @	1.00
Acids, Acetic, 56%	cwt.	6.50 @	7.00
Carbolic, C. P.	lb.	*.20 @	.30
*Cresylic, 95%	gal.	1.00 @	1.15
Muriatic, 20 deg.	lb.	1.60 @	1.90
Muriatic, 22 deg.	cwt.	1.90 @	2.20
Nitric, 42 deg.	cwt.	8.00 @	8.50
Nitric, 40 deg.	cwt.	7.75 @	8.00
Sulphuric, 60 deg.	ton	10.00 @	16.00
Tartaric, crystals	lb.	.86½@	—
Aluminum Flake	ton	29.00 @	31.00
Aniline oil, bulk basis	lb.	.24 @	.26
Antimony, metal spot	lb.	7.25 @	7.50
Oxide	lb.	.11½@	.14
Sulphuret, red	lb.	.25 @	.26
Sulphuret, golden	lb.	.26 @	.30
Sulphuret, crimson	lb.	.42 @	.52
Asbestos	ton.	35.00 @	45.00
Asphaltum, Egyptian	lb.	.20 @	.30
Domestic	ton	22.00 @	30.00
Barium sulphate, technical	lb.	.04½@	.05
Sulphide	lb.	.07¼@	.07½
Barytes, prime white imported 4	ton	Nominal	
white, domestic	lb.	.30 @	.31
off color, domestic	lb.	.21 @	.24
Benzol, pure, bulk	gal.	.22 @	.27

Beta-naphtol, sublimed	lb.	.85 @	.90
unsublimed	lb.	.65 @	.75
Blacks, Drop	lb.	.05½ @	.15
Ivory	lb.	.16 @	.30
Carbon, gas, cases	lb.	.14 @	.25
Lampblack, R. M	lb.	.14 @	.45
Mineral blacks	ton	35.00 @	45.00
Blues, Prussian	lb.	.80 @	.90
Soluble	lb.	.85 @	.95
Ultramarine	lb.	.12 @	.50
Browns,			
Umber, Turkey, burnt, powdered	lb.	.05½ @	.07
American, burnt	lb.	.03½ @	.04
Cadmium sulphide, yellow	lb.	2.00 @	2.25
Carbon, bisulphide, bulk	lb.	.07½ @	.09
tetrachloride, drums	lb.	.14 @	.15
Caustic Soda, 76@78%	cwt.	2.70 @	3.25
Chalk, precipitated, extra light	lb.	.05¼ @	.06¼
light	lb.	.05 @	.06
heavy	lb.	.05½ @	.06
China clay, domestic	lb.	.15 @	.20
imported	lb.	.18 @	.25
Fossil flour	lb.	.03¾ @	.05
Gilsonite	ton	47.50 @	60.00
Glue, extra white	lb.	.36 @	.45
medium	lb.	.31 @	.35
low grade		.20 @	.25
Glycerine, C. P. (drums)	lb.	.16½ @	.16¾
Graphite, flake (bbl.)	lb.	.18 @	.20
powdered (bbl.)	lb.	.13 @	.15
Green, chrome, R. M	lb.	.14 @	.20
Ground glass (fine)	lb.	.03½ @	.04
Hexamethylene	lb.	1.30 @	—
Infusorial earth, powd'd	ton	60.00 @	123.00
bolted	ton	70.00 @	—
Iron oxide, red, reduced grades	lb.	.07 @	.08
red, pure, bright	lb.	.15 @	.20
Lead, red, dry (casks)	lb.	.10¼ @	.10½
sublimed	lb.	.09¼ @	.09¾
white, basic carb	lb.	.09 @	.09½
white, basic sulp	lb.	.08¼ @	.08½
Lime flour	lb.	.01¾ @	.02
Litharge (casks)	lb.	.09¾ @	.10½
English	lb.	*.12 @	.13
Lithopone, domestic, bbls.	lb.	.07 @	.07¼
Magnesia, carbonate	lb.	.12 @	.14
calcined, heavy	lb.	.12 @	.14
calcined light	lb.	.65 @	.75
Magnesite, calcined, pwd.	ton	50.00 @	65.00
Mica, powdered	lb.	.04¾ @	.05
Mineral rubber (asphaltum base)	ton	80.00 @	115.00
Naphtha, motor gasoline, (steel bbls.)	gal.	.23½ @	—
68 @ 70 degrees (steel bbls.)	gal.	.30½ @	—
70 @ 72 degrees (steel bbls.)	gal.	.31½ @	—
73 @ 76 degrees (steel bbls.)	gal.	.33½ @	—
machine (wood bbls.)	gal.	.36½ @	—
Oil corn, crude	lb.	.13 @	.13½
corn, refined	gal.	1.60 @	—
linseed (bbls.)		1.53 @	—
Oil palm, Lagos	lb.	Nominal	
pine, yellow	gal.	.67 @	.69
rapeseed, refined	gal.	1.45 @	1.50
rapeseed, blown	gal.	1.65 @	—
rosin, first rectified	gal.	.74 @	—
tar (commercial)	gal.	.43 @	—
Orange mineral, American	lb.	.13¼ @	.14¼
imported	lb.	*.15 @	.20
Paraphenylenediamine	lb.	3.25 @	4.50
Petrolatum, bbls., amber	lb.	.08½ @	.09
pale yellow	lb.	.07½ @	.08
Pine tar kiln	bbl.	12.50 @	—
Pitch	bbl.	8.50 @	—
Plaster of paris	bbl.	2.00 @	3.00
Red Tuscan	lb.	.22 @	.30
Indian (reduced)	lb.	.08 @	.10
Standard	lb.	.12 @	.16
Rosin (common to good) @ 280 lbs.	bbl.	12.70 @	—
Rotten stone, powdered	lb.	.02½ @	.04½
Rubber, substitute, black	lb.	.13 @	.17
white	lb.	.15 @	.24
brown	lb.	.20 @	.25
Shellac, fine orange	lb.	.55 @	.56
T. N.	lb.	.46 @	.47
Bleached ordinary	lb.	.50 @	.51
Bleached bonedry	lb.	.57 @	.58
Silex (silica)	ton	22.00 @	40.00
Soapstone, powdered	ton	12.00 @	17.50
Starch, corn, powdered	lb.	4.12 @	4.34
Sulphur, crude	ton	*50.00 @	—
100 pounds		3.20 @	4.25
roll		3.20 @	—
commercial superfine		2.50 @	—
Talc, American	ton	20.00 @	40.00
French	ton	*30.00 @	35.00
Toluol, pure, in drums	gal.	.25 @	.30
Tripolite earth	ton	60.00 @	70.00
Turpentine, pure gum—spirits	gal.	.69 @	.69½
wood	gal.	.62 @	.64
Venice, artificial	gal.	.13 @	.15
Vermilion, English	lb.	1.40 @	1.50
Wax, beeswax, crude yel.	lb.	.39 @	.40
ceresin, white	lb.	.18 @	.25
carnauba, No. 3	lb.	.46 @	.48
Montan	lb.	*.35 @	.36
ozokerite, black	lb.	*.60 @	.61
ozokerite, green	lb.	*.65 @	.80
Wax, Paraffin, refined, 118 120 M. P. (bbls.)	lb.	.09¾ @	.10
Paraffin, 123/125 M. P.	lb.	.11¼ @	—
Wax, Paraffin, 128/130 M. P.	lb.	.12½ @	.16
133/135 M.P.	lb.	.13¼ @	.13½
Crude, 120/122 M.P.	lb.	.10¾ @	—
124/126 M.P.	lb.	.10½ @	.11
Whiting, commercial	cwt.	1.25 @	—
Alba	cwt.	1.25 @	—
Paris, white, American	cwt.	1.50 @	1.75
English cliffstone	cwt.	1.25 @	2.75
Yellow chrome	lb.	.26 @	—
†Zinc oxide, States Brand		.10 @	—
horsehead brand	lb.	†.10 @	.10¼
selected	lb.	†.10½ @	.10¾
"XX red"	lb.	†.10 @	.10¼
French process, green seal	lb.	†.12½ @	.12¾
red seal	lb.	†.12 @	.12½
white seal	lb.	†.13 @	.13¼
substitutes	ton	35.00 @	40.00
sulphate, pure	lb.	*.04½ @	.05

* Nominal. † Contract prices.

Crude Rubber

March 21, 1919.

The market for crude rubber is in a quiet state, and business is of small volume conducted along well established lines. Manufacturers are not buying much on spot, being well supplied with rubber coming in on contracts booked earlier in the season, and as their business does not warrant additional purchases in the spot market, they are holding off for the time being.

Arrivals continue heavy, one steamer bringing in 5,253 barrels and 1,281 cases of plantation rubber. Plantation rubber for spot delivery is showing a distinctly weaker tone and large offerings of late arrivals have been made at prices considerably below those prevailing at our last report. Consumers occasionally take up some of these offers, when the concessions offered are enticing enough.

Para up-river fine is quoted 1 cent lower at 56 and 56½ cents per pound. Ceylon rubber is generally weaker throughout, and offerings are large. Smoked sheets ribbed are lower at 51 and 52½ cents, smoked sheets plain are quoted down to 50 cents, and first latex pale crepe is down to 52 and 52½ cents per pound. Mexican scrap is firmer at 39 cents, while Guayule rubber is easier at 30 cents, a drop of two cents.

Para—Up-river fine	56	@	56½
Up-river medium	53	@	....
Up-river coarse	34	@	....
Caucho ball	34	@	....
Islands fine	48½	@	....
Islands coarse	22½	@	....
Cameta	23	@	....
Madeira fine	62	@	....
Ceylons—Smoked sheets, ribbed	51	@	51½
Smoked sheets, plain	50	@	....
First latex pale crepe	52	@	52½
Amber crepe	54	@	....
Clean brown crepe	54	@	....
Centrals—Corinto prime	37	@	....
Esemeralda, prime	37	@	....
Mexican scrap	39	@	....
Balata sheets	90	@	....
Balata, block Panama	53	@	....
Guayule	30	@	....
Africans—Rio Nunez string—Massai, red	55	@	....

Scrap Rubber

NEW YORK, March 21, 1919.

The scrap rubber market is still undergoing readjustment and general stagnancy continues to prevail. Reclaimers are taking on little or no scrap for the reason that the demand for reclaimed rubber is practically at a standstill. However, scrap rubber prices are gradually working down to a level that will enable shoddy made from scrap to compete successfully with crude rubber—unless there is a decline in crude rubber values and when this level is reached, in other words, when the readjustment is consummated, the demand for shoddy will come and reclaimers will be more interested in scrap rubber.

In view of the mild weather we have experienced throughout the winter it can be expected that old tires will soon be available in large quantities and will add further to the large stocks on hand. Automobiles have been in constant use this year more generally than ever before and this necessarily means a big collection of old casings and tubes for the spring.

Scrap tires have shown no activity during the past fortnight and in some cases prices for mixed tires have fallen below pre-war levels.

The market for inner tubes is easy, with little or no movement of merchandise. The same is true of mechanicals, in which values have again declined.

The following are averages of dealers' sales prices in New York:

Boots and shoes	6.50	@	6.75
Arctics, trimmed	4.75	@	5.00
Arctics, untrimmed	3.75	@	4.00
Tires—Automobile	2.50	@	4.00
Bicycles, pneumatic	3.00	@	3.25
Mixed hose	1.25	@	1.50
Air brake	3.75	@	4.00
Inner tubes, No. 1	17.00	@	18.00
Inner tubes, No. 2	8.00	@	9.00

Akron Booming Again

(Special Akron Correspondent)

Akron rubber companies are preparing to handle a greatly increased business this year.

The Goodyear Tire & Rubber Co. has announced plans for a $500,000 addition to its factory on land, the corporation now owns on East Market street. Construction work will start soon, it is said.

There are reports that The B. F. Goodrich Co. officials are planning to erect a large factory building on South Main Street on land adjoining the present plant. No announcement has been made.

The Firestone Company just recently placed its No. 2 plant in operation, and the smaller companies also are planning additions.

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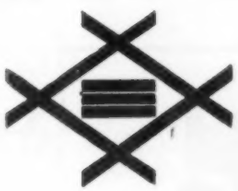

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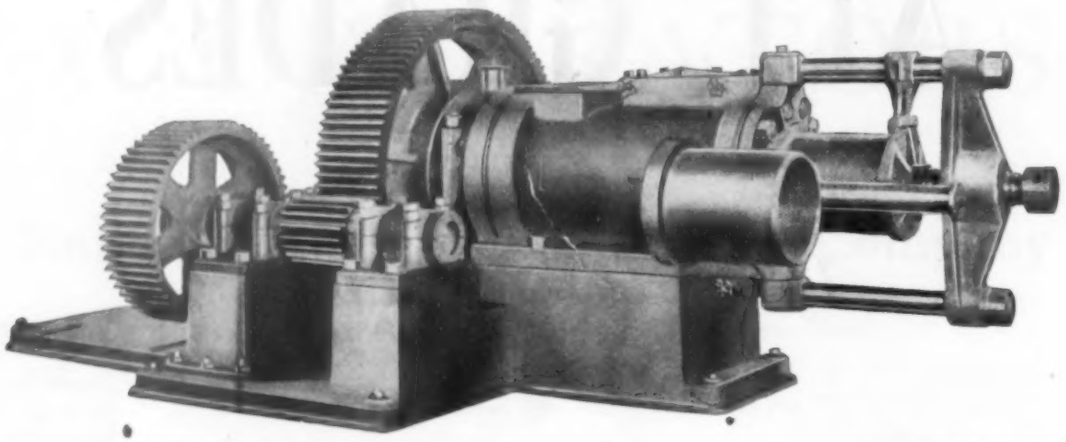

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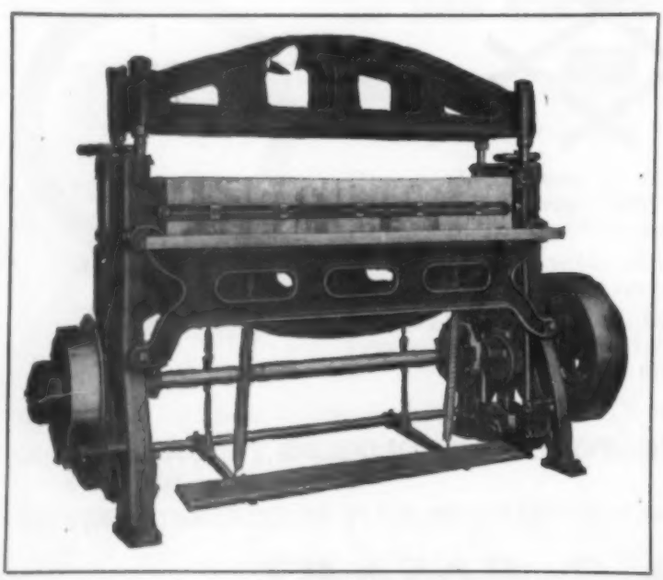

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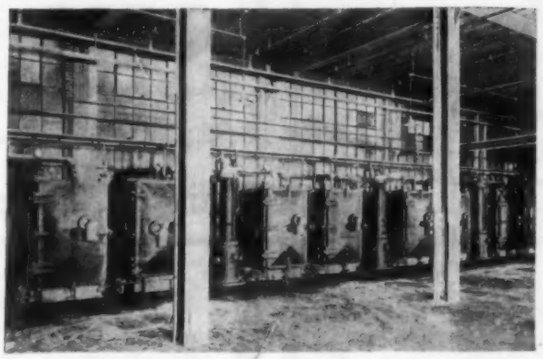

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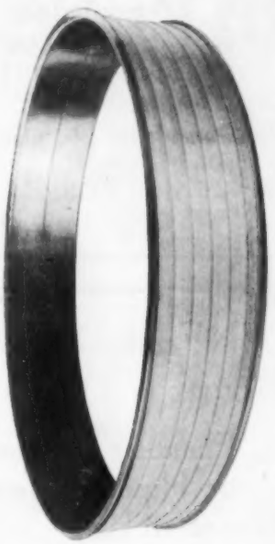

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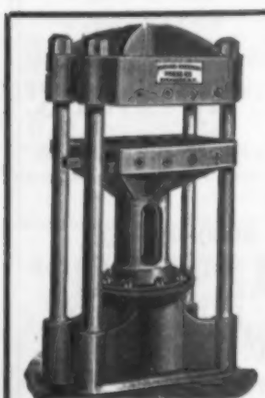

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